1951 Convention Number

COAL MINING

MAY, 1951 "The Picture-Book of the Industry" VOLUME 28, No. 5

Save time on Pesky Jobs

with the 18-pound Le Roi-CLEVELAND Hornet Rock Drill

...and your miners can put more work on production

The H-22 Hornet is a terrific little rock drill. It weighs only 18 lbs., but it has all the design features found in larger Le Roi-CLEVELAND machines. That is why, pound for pound, you can't beat it for drilling speed.

And here's what your miners can do with it—easily and quickly, without strain: Drill holes for trolley hanger bolts. Clean up roof. Clear out rock falls. Brush bottom. Drill oversize pieces at the grizzly. Cut hitches. And a thousand and one other odd jobs.

Because the H-22 Hornet is so light, and drills so fast for its weight, your miners get these tasks done in a hurry — more time can be spent on production; your costs look better. So equip your miners with Le-Roi CLEVELAND Hornets. Complete information is available — just write for it.

H-22 HORNET FEATURES

- Weight — 18 lbs.
- Powerful blowing
- Strong rotation — easy holding
- Both wet and dry types
- Conventional rifle-bar rotation (3 pawls)
- Replaceable spacer bushing
- Spade or Tee handle
- 2-piece chuck and rotating sleeve
- Lubrication pocket in handle
- Chuck size 7/8" hex x 3 1/4" — adapters too
- Drop forgings for major parts

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LE ROI COMPANY

CLEVELAND ROCK DRILL DIVISION

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Plants: Milwaukee • Cleveland • Greenwich, Ohio

RD-34

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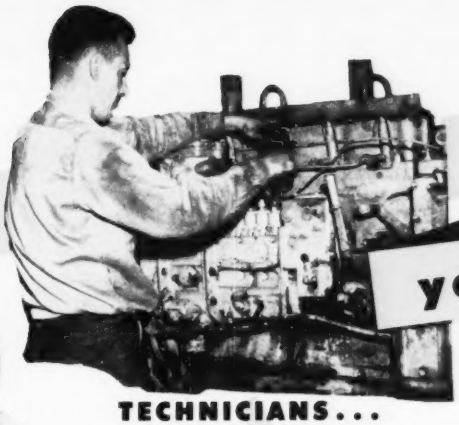

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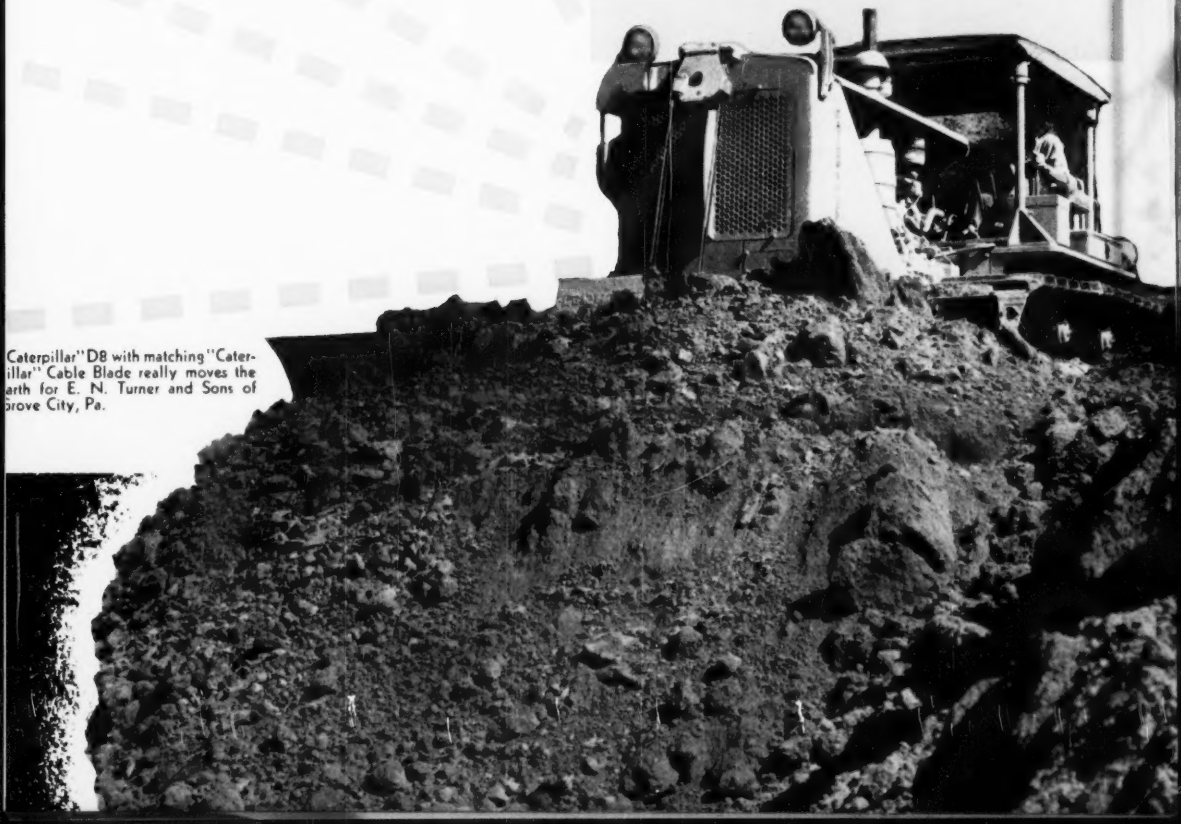
Beckwith service personnel are trained in "Caterpillar" precision methods of repair. You're assured of the fastest, most accurate work for your equipment.

SPECIALIZED TOOLS

... designed and recommended by "Caterpillar" and other manufacturers — are used by Beckwith crews to speed your repair job — to save you money!

There are reasons aplenty for picking Beckwith Machinery Company as your equipment headquarters. As your "Caterpillar" Dealer, Beckwith offers the finest construction and industrial equipment in America . . . as your "Caterpillar" Dealer, Beckwith offers the finest service in the area!

Stop in at the Beckwith Machinery Company branch near you. Look over the facilities and the "Caterpillar" service equipment . . . meet the sales engineers who are always at your service . . . meet the skilled technicians that make up our service crews. You'll see why Beckwith is "equipment headquarters" for western Pennsylvania.

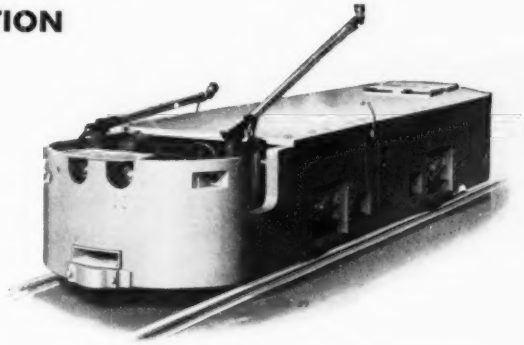


Caterpillar" D8 with matching "Caterpillar" Cable Blade really moves the earth for E. N. Turner and Sons of Grove City, Pa.

JEFFREY Equipment

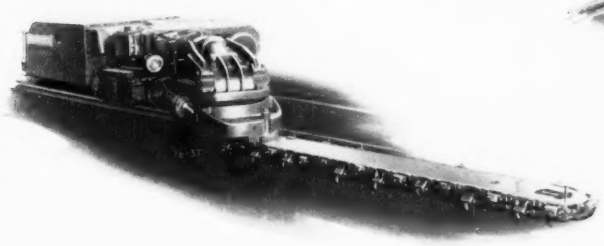
FOR MODERN COAL MINE OPERATION

Many of the units shown on these two pages will be on display during the big Coal Show — Booths 2543-2655. Stop in to see them . . . become conversant with the numerous advantages they provide. To help produce better coal — faster — and at lower cost, Jeffrey offers a complete line of modern mining machinery. Ample literature will be provided during the Show. Look us up.



ELECTRIC LOCOMOTIVES

Built in a wide variety of types and sizes, for either trolley or storage battery operation. Feature round end, "armor plate" steel frames, anti-friction journal boxes and motor axle suspension; handwheel, air, dynamic or hydraulic brakes.

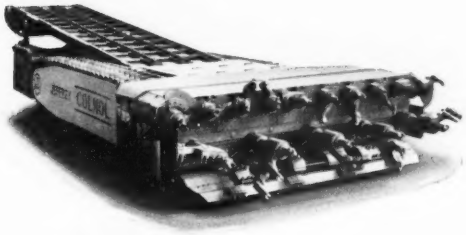


UNIVERSAL CUTTERS

Hydraulically operated and track mounted, the Jeffrey 29-U Universal cutter cuts anyplace in the seam—top, bottom, center and shearing. Only 33½" high above rails.

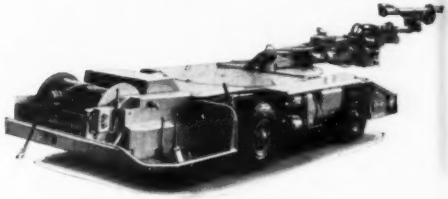
70-UR UNIVERSAL CUTTER

Cuts any place in the seam, including shearing. Completely hydraulic in operation. Furnished in 30" and 34½" heights, with single or dual drive wheels. You'll like the flexibility of the 70-UR.



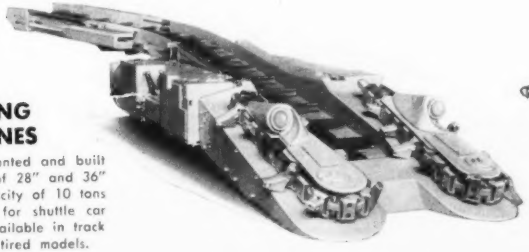
"COLMOL" CONTINUOUS MINING MACHINE

Various models for mining and loading from 3 to 5 tons per minute without the use of explosives. Mines an entire room 9'6" wide, with varying heights—advancing at the rate of 24" per minute or more.



DRILLING MACHINES

Types 56-FHR or RDR for off-track mining. Can be equipped with arms for horizontal or roof drilling.



LOADING MACHINES

Crawler mounted and built in heights of 28" and 36" with a capacity of 10 tons per minute for shuttle car loading. Available in track and rubber tired models.

SHORTWALL TRUCK

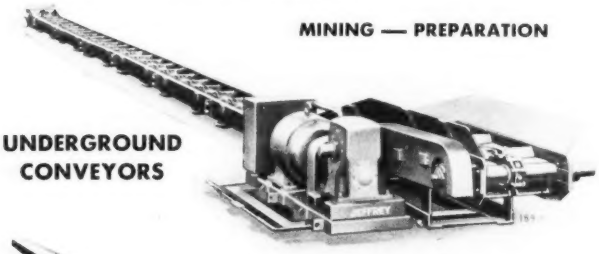
For transporting any type of SHORTWALL cutter. Tilting pan facilitates loading and unloading machine. Can be used also for transporting supplies.

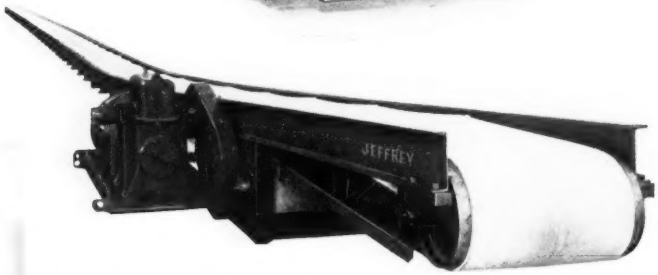
JEFFREY serves the coal industry

ALL THE WAY — from FACE to R. R. CARS or BARGES

MINING — PREPARATION

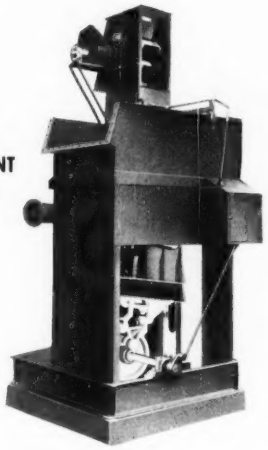
UNDERGROUND CONVEYORS





Various types of Underground Conveyors for face, room and entry work. Capacities vary as do chain and belt speeds, depending upon length of conveyor. These Sectional type conveyors will handle your coal in good shape . . . will take it away as fast as it comes. A Face Conveyor and a Gathering or Haulage (belt type) Conveyor are shown above.

JEFFREY ONE COMPARTMENT DIAGRAM JIG



PREPARATION EQUIPMENT

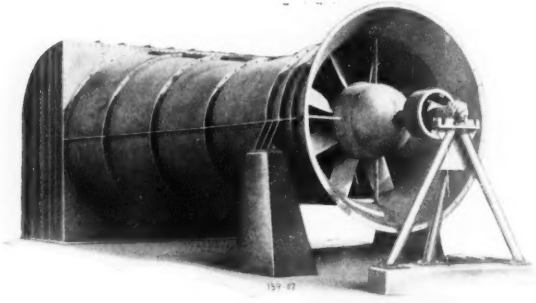
Jeffrey one compartment Diaphragm JIG with 25 sq. ft. of screen area.

Jeffrey Baum and Diaphragm Jigs represent the most effective high capacity mechanical coal cleaning units on the market today. Proved design—carefully designed—no pre-sizing necessary. Single or multiple compartments.

Air-operated Baum Jigs—for capacities up to 700 T. P. H.

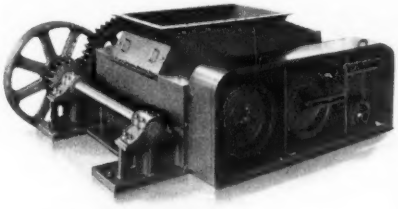
Diaphragm Jigs—for capacities up to 200 T. P. H.

Also Unit Washers for washing up to 200 T. P. H. These units combine a Diaphragm Jig with a self-contained dewatering and sizing screen, and water clarifying tank.



FANS AND BLOWERS

Jeffrey "AERODYNE" mine fans provide the highest efficiency in ventilation, insuring an abundant supply of fresh air when and where needed most. A range of sizes to meet capacity requirements up to 500,000 C. F. M. Portable Blowers also available for blowing fresh air to dead ends through flexible tubing.



CRUSHERS

Heavy duty Double Roll machines for large capacities. Adjustable to provide a product range from 4" to 12". Crush anything that comes from mine face—capacities up to 1500 T. P. H. depending upon size of product. Large size—30" x 36"—double roll Crusher shown.

Also Shuttle Cars, MOLVEYOR units, Screens, Feeders, Belt Idlers, Apron and Scraper Conveyors, Loading Booms, Single Roll Crushers, etc. Many of these units will be on display . . . don't miss them.

THE JEFFREY MANUFACTURING COMPANY

Established in 1877

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THE GALION IRON WORKS & MFG. CO., Galion, Ohio
THE KILBOURNE & JACOBS MFG. CO., Columbus, Ohio

COAL MINING

Vol. XXVIII MAY, 1951 No. 5

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R&S COMPANY COAL SHOW NEWS

"PROMISES TO BE BEST SHOW EVER HELD" says F. E. MUELLER

In a recent interview F. E. Mueller, president of Roberts and Schaefer Company, Chicago, predicted that the 1951 Coal Show will be the biggest and best ever held, from the standpoint of attendance, quality and scope of meetings to

F. E. MUELLER

be presented, as well as from the standpoint of modern methods and machines to be displayed.

Not since World War II, he said, has there been such a challenge to the Coal Industry to increase its productive efficiency and never has any meeting given promise of so many answers to that challenge as the 1951 Coal Show.

COUNTER-CURRENT HEAVY-MEDIA SEPARATOR FEATURE OF R & S EXHIBIT

To be demonstrated at the Roberts & Schaefer exhibit will be a 3' x 6' Hardinge Counter-Current Heavy-Media Separator unit. The unit was constructed for use in the new R&S testing plant at Harvey, Illinois, and will be shipped there immediately after the Show. No "toy," this is an actual, operating machine. Though the first one to be used in the bituminous coal industry, it employs principles already proved successful in iron ore separation.

Roberts and Schaefer Company is exclusive licensee for the Hardinge Counter-Current Heavy-Media Separator in the bituminous coal industry.

NEW R & S PREPARATION BULLETINS BEING READIED FOR COAL SHOW

New R&S bulletins, with considerable new information, are being prepared for release at the 1951 Coal Show. In addition to an 8-page bulletin featuring Wet Washing and an 8-page bulletin on Air Washing Large and Small Sizes, there will be a 16-page bulletin, "Preparation Parade," featuring outstanding new preparation plants. Whether you attend the Coal Show or not, you can get a set of these new bulletins as soon as they are off the press by addressing your request to Roberts and Schaefer Co., 130 N. Wells St., Chicago 6, Illinois.

WILLIAM C. McCULLOCH to DISCUSS NEW AIR CLEANING PRACTICES AT SHOW —

As part of a panel on coal preparation problems and solutions at the 1951 Coal Show, Wm. C. McCulloch, R&S Preparation Manager, will discuss current practices in air cleaning of coal.

The following authorities will discuss related subjects as part of the same coal preparation panel: Byron Bird, Jeffrey Manufacturing Co. (Wet Cleaning Fine Coal); David R. Mitchell, Penn State College (Coarse Coal Cleaning); James Hannigan, Glen Alden Coal Co. (Cleaning Small Sizes of Anthracite); and F. P. Calhoun, Rochester & Pittsburgh Coal Co. (Related Problems of Mechanical Coal Cleaning).

D. E. MORGAN

R&S INTERNATIONAL REPRESENTATIVE TO ATTEND CLEVELAND COAL SHOW

David E. Morgan, international representative for Roberts and Schaefer Company, will be at the 1951 Coal Show and available part time to answer questions concerning his recent 7-month tour of coal and metal mines in England, Belgium, France, Tunisia, Morocco and Sardinia. As the R&S contracting engineer, Mr. Morgan recently played a central part in the engineering of a modern preparation plant for the Government of Italy on the island of Sardinia, off the coast of Italy.

R. J. LOFQUIST

RALPH J. LOFQUIST TO ANSWER HYDROGENATION QUESTIONS AT R & S BOOTH

Mining people interested in the preparation of coal for hydrogenation to convert it to gasoline and other liquid fuels will be able to discuss the subject with Ralph J. Lofquist at the R&S booth. As the Roberts and Schaefer contracting engineer for the preparation plant at the Bureau of Mines pilot project at Louisiana, Missouri, Mr. Lofquist is familiar with overall hydrogenation considerations and is especially informed as regards coal preparation requirements. Mr. Lofquist's story of the hydrogenation plant generated considerable interest when published in a leading industry publication as well as when presented in a recent talk before a coal industry group, and it is anticipated that answering questions will keep him busy throughout the length of the show.

KEY PERSONNEL TO STAFF BOOTH

According to present plans, the following R&S executives will staff Booth No. 2000 at the 1951 Coal Show in the Cleveland Auditorium: Frank E. Mueller, J. E. Kalinka, R. T. Middleton, R. E. Sloan, E. C. Carris, W. C. McCulloch, R. G. Miller, R. G. Miller, Jr., R. J. Lofquist, Raymond Wagner, Laning Dress and W. W. Blood. Mr. R. J. Russell, secretary of the Hardinge Company, will also be in attendance. Other personnel may be announced prior to May 14, opening date of the show.

ROBERTS & SCHAEFER COMPANY

BOOTH 2000 AT THE 1951 COAL SHOW

BY THE YARD..

OR BY THE TON..

"EUCS"

Haul More Loads at Less Cost!

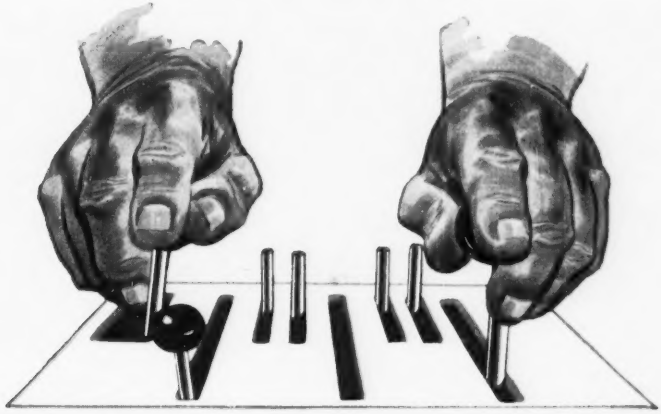
Leading contractors and industrial users buy Euclids because they are job proved for high production at the lowest cost per ton or yard moved . . . and because "Eucs" are designed and built throughout for long, efficient service in open pit mines and quarries, heavy construction and industrial work.

There is a Euclid model to meet every requirement in off-the-highway work . . . and body designs for all types of materials. Their rugged strength and stamina have made "Eucs" the standard hauling equipment of many leading operators. The Euclid Loader is built to match the speed and efficiency of other Euclid earth moving equipment. It is designed for use with the Euclid Bottom-Dump and other large capacity hauling units, and provides fast, mobile loading of practically any material.

Euclid's world-wide distributor organization assures fast, efficient service to all owners. Write for complete information on the Euclid models best suited to your job requirements and plan now to move more loads per hour at more profit per load with "Eucs" on your future off-the-highway work.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

EUCLIDS *Move the Earth*



At your fingertips... up to 25% increased output with

SMOOTHER, EFFORTLESS, *Speed-o-Matic* CONTROLS

Fingers instead of muscles do the work with Link-Belt Speeder's exclusive Speed-o-Matic* controls! Every move of Shovel-Crane is faster, more accurate, easier. You get "pin point" placement of bucket, shovel or hoe. No drag or lag, jerk or jump. You "feel the load" every inch of the way—smoothly, surely, safely.

As for your operator, what a difference this control makes! He's fresh and fit, even during long overtime. And he lifts, loads and swings with a tireless precision that pays off in greater output, more profits for you.

Only Link-Belt Speeders offer you the unequalled advantages of Speed-o-Matic *full* hydraulic controls. Look to Link-Belt Speeder for more work, more kinds of work, more of the time.

* On 51, 300 and 500 series.

K-595 stripping overburden
Tremendous power, stability and swift, easy Speed-o-Matic control makes this K-595 ideal for high output in mining operations. In dragline work the Independent Rapid Boom Hoist, powered both up and down makes long throws, fast hoisting and swinging simple routine. Rugged construction assures low maintenance.

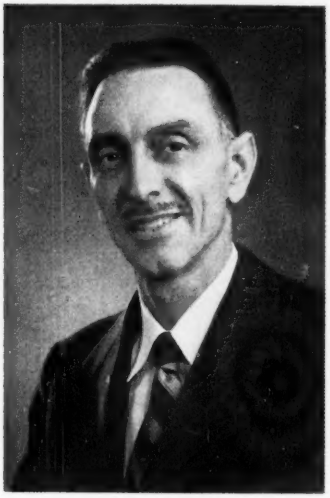
12,371

LINK-BELT SPEEDER
CORPORATION

Builders of the most complete line of shovels, cranes and draglines
CEDAR RAPIDS, IOWA

Here and There in the Coal Industry

F. T. Bowman, until recently assistant general manager of the Bowdil Company, Canton, Ohio, has



F. T. Bowman

been named general manager to succeed his father, the late C. L. Bowman.

H. M. Morrow, C. L.'s nephew who has been chief engineer of the mining products firm, has been made assistant general manager and will continue in his engineering and development capacity.

Leroy D. Bowman, brother of Bowdil's late president, and active

H. M. Morrow

in the management since 1919, has been named vice-president and treasurer.

The Joy Manufacturing Company, Henry W. Oliver Building, Pittsburgh 22, Pa., has announced the appointment of Russel C. Vance as District Manager of Coal for the Pittsburgh Sales Office.

Russel C. Vance

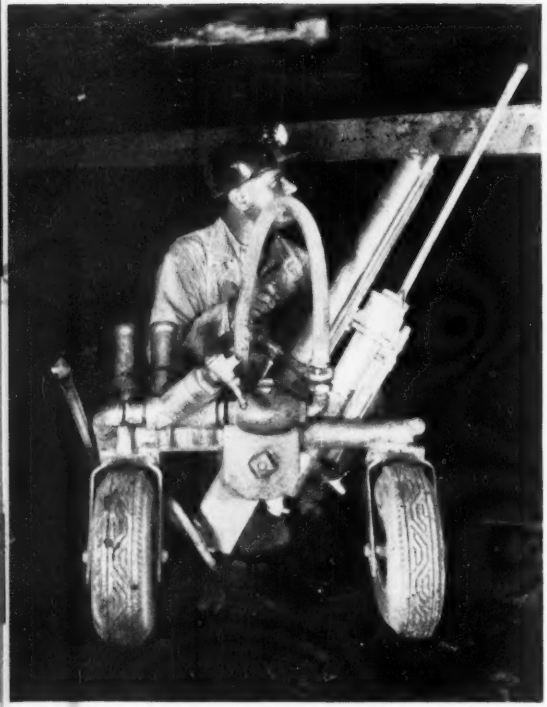
Mr. Vance began his mining career at the age of 14 at the Bell and Zoller Mines at Zeigler, Illinois, where he spent a period of 7 years. He left this company to go with the Cardox Corporation as a field demonstrator, being promoted to plant superintendent and assistant district manager before leaving the company in 1941 to become a sales engineer for the Joy Manufacturing Company. In 1947 Mr. Vance was appointed assistant district manager of the Pittsburgh Sales Office, from which he rose to his present position of district manager. Mr. Vance succeeds the late Mr. Henry Thies.

Fred H. Johnston, 72, vice president and director of Goodman Manufacturing Company, Chicago, died at his home in Pampano Beach, Florida, March 19, 1951. Mr. Johnston had been associated with the Company 46 years, having been employed as cashier in 1905. In 1909 he was promoted to the office of assistant treasurer and in 1918 became secretary and treasurer. Since 1921 he had served as director of the Company and vice president since 1923. For many of these years he also served as vice president and director of Superior Steel and Malleable Castings Company of Benton Harbor, Michigan. He was a member of the Masonic Lodge (32° Shriner) and of the South Shore Country Club.

Fred H. Johnston

Mr. James B. Morrow, first vice president of the Pittsburgh Consolidation Coal Company announced his retirement, effective April 9. Mr. Morrow has been with the Pittsburgh Consolidation Coal and its predecessor since 1927, when he came to Pittsburgh as consulting engineer for the Pittsburgh Coal Company.

One man can drill 50% MORE HOLES in less time and with far less effort—with



JOY Roof-Bolting Drills and Mine-Air Compressors—available in a complete range of types and sizes to meet any requirement—are backed by more than 50 years of drill and compressor-building experience.

the Handy JOY RUBBER TIRE-MOUNTED ROOF-BOLTING DRILL

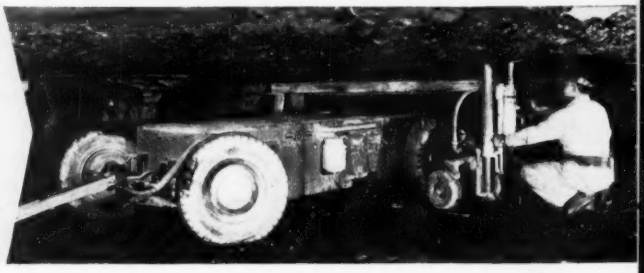
★ **Highly Mobile and Flexible.**

★ **Greater stability... and the *one* JOY Drill does your *entire* Roof Bolting job—drills the hole, drives the bolt and tightens the nut.**

The other half of your Roof-Bolting Team

JOY MINE-AIR COMPRESSORS

*Compact * Mobile * Highly Efficient*



Write for Bulletins, or *Consult a Joy Engineer*

W&D CL 2964

JOY MANUFACTURING COMPANY

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IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

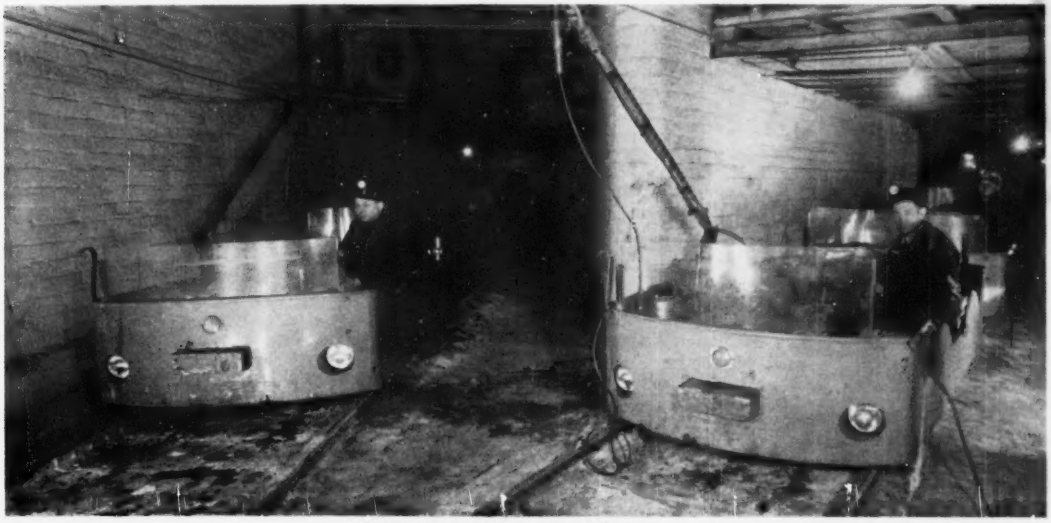
Overall view of the belt conveyor taking coal to the Roberts & Schaefer cleaning plant and the power house.

New Mining Equipment at Crucible Fuel Co.

Methods of mining, like all earthly things, improve with time. Several years ago, covering the coal mine of the Crucible Fuel Company, we showed what were the late types of mining machines, at that time. The new machines shown and discussed in this article are a step ahead of the ones in the previous article.

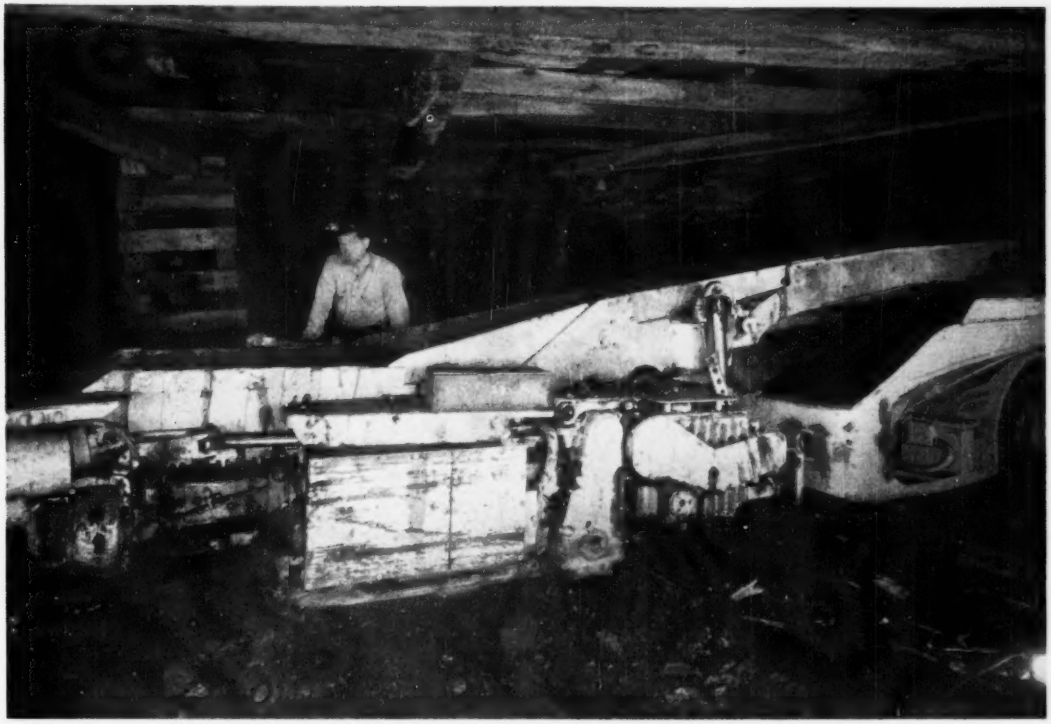
While the coal industry is moving forward, technologically speaking, its forward movement could and should be accelerated. Before many more forward steps are taken, however, our mining personnel must know considerably more, not only about technological sciences, but also more about laws of nature.

Science is a method which enables man to understand more of nature. There must be more applied science in the coal mining industry. Science substitutes knowledge and understanding for superstition and fear. At the moment contributions of science to human and worldly problems are too vaguely realized. Science will always be a challenge to intelligence and imagination. Science dedicates itself to the discovery, organization and humanization of truth and the truth about



Lee-Norse Jeeps at shaft bottom.

The Joy 10 rubber mounted universal cutting machine. Note dual rubber on front.



Goodman Model 665 loading machine and Goodman Model 570 shuttle car in operation.

nature is what we need to know.

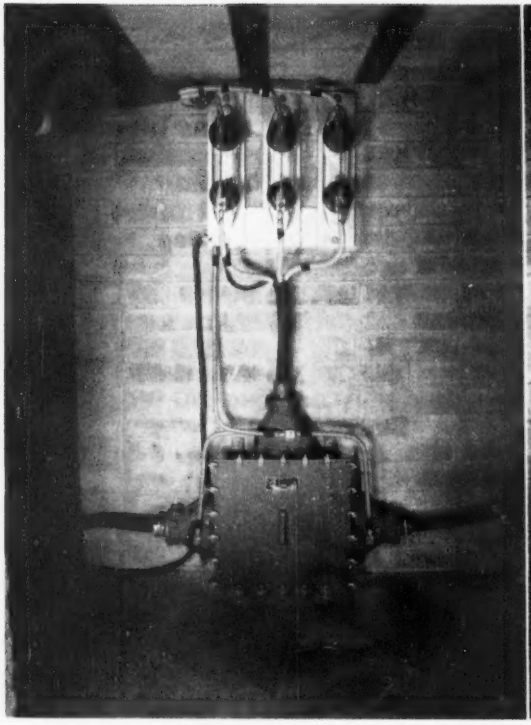
What is the significance of science in terms of human value? Civilization is a stage in the valuation of mankind toward intellectual enlightment. Scientific activity is one phase of man's evolution toward intellectual enlightment: A question at the moment is "how much do we know in relation to what evolved man is capable of learning?" We have already found out that the more we learn the more we realize how much we need to know.

Every new development requires long and painstaking study. Painstaking study makes man humble and humility is the beginning of wisdom. Research, an ally of science, is motivated by a desire to understand nature. We must never permit a moratorium on research.

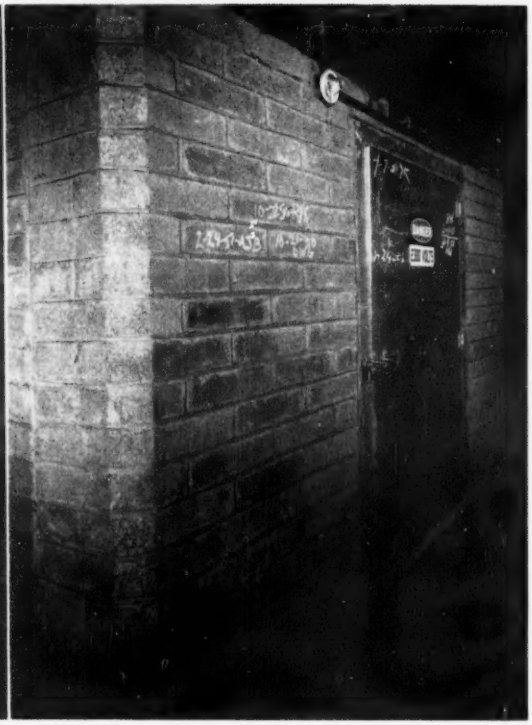
Discoveries and understanding of many phenomena have necessarily waited on man's inventiveness in devising instruments to aid his senses. Scientific and practical knowledge grows with use and is enlarged with sharing. Men working together in a spirit of mutual tolerance and cooperation can achieve miracles.

Shuttle car loading into mine car in entry.

Canton automatic electric switch throwers are used on haulroads.



Three-way junction box switch at bottom of bore hole.



Concrete block housing for the 3-way junction box switch.

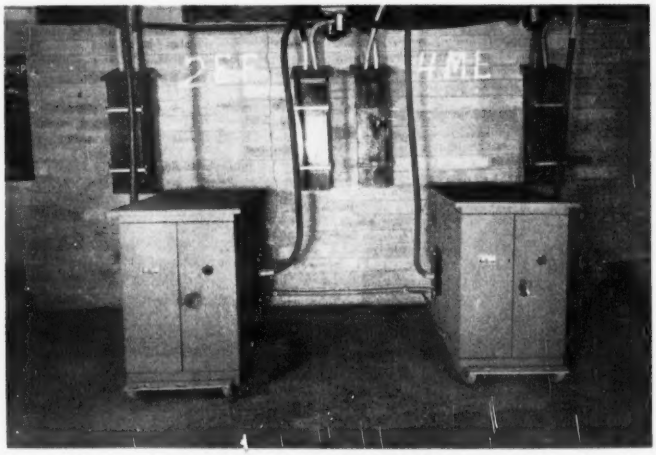
Type KSA-ITE Automatic Reclosing Circuit Breaker that protects the DC line.

We are in an age in which products of scientific inquiries confront us from every angle and now have more new mechanical robots than men can be trained to keep them working. Every one of us needs to better understand science and scientists. The coal mining industry must take immediate and drastic steps to train enough of the right kind of technicians to operate the instruments and automatic machines that are coming into the coal mining industry.

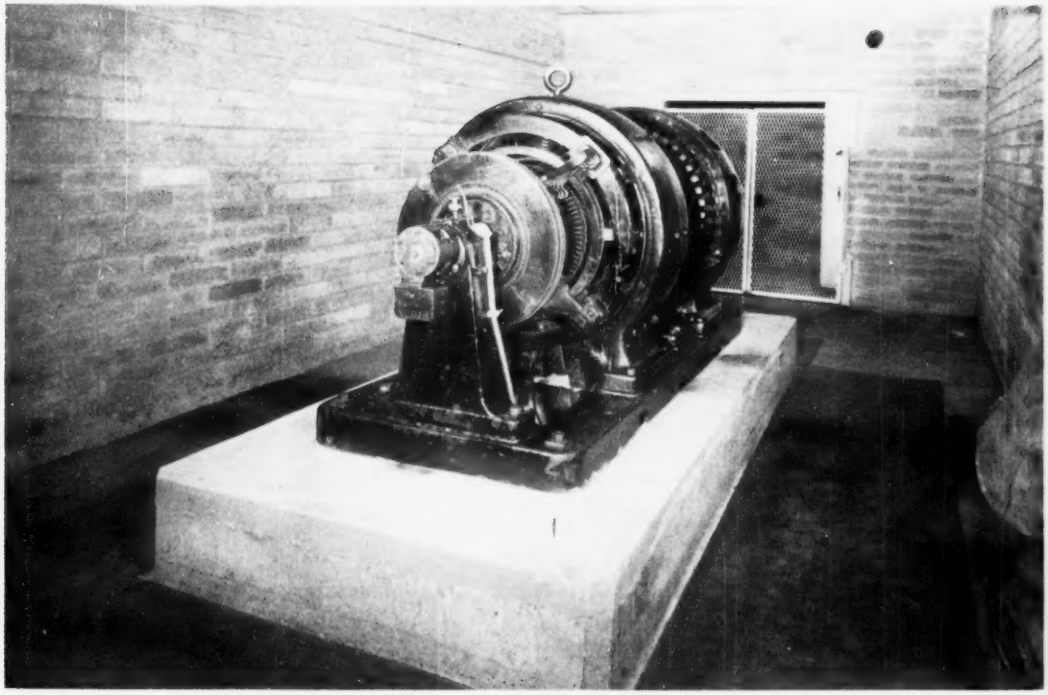
The Crucible Fuel Company operates in the Pittsburgh seam of coal on the Monongahela River at Crucible, Greene County, Pennsylvania. The coal is 7 feet in thickness.

This latest equipment is the off-

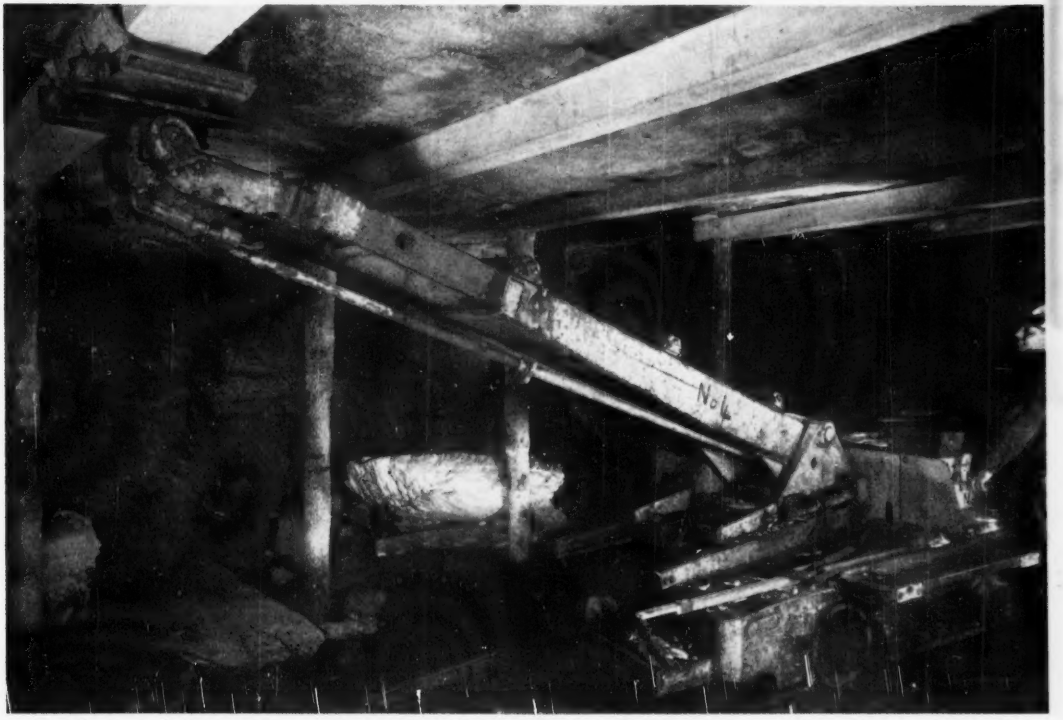
(Continued on Page 25)



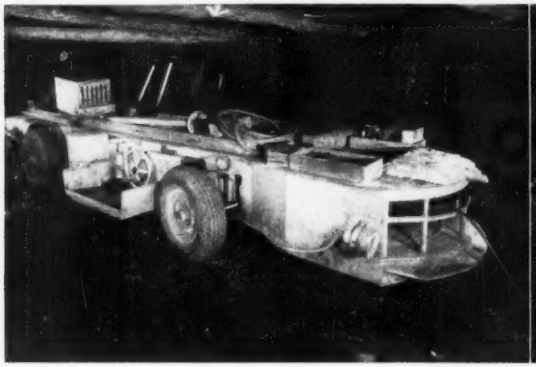
Two 1200 Ampere type KSC Automatic Reclosing sectionalizing Circuit Breakers outside the Sub-Station.



Typical power generating room in the Crucible Mine. Generating unit is 300 kw.



A track mounted timber setting machine which is the same Model as the rubber tire mounted one which is to work with the off-the-track equipment.



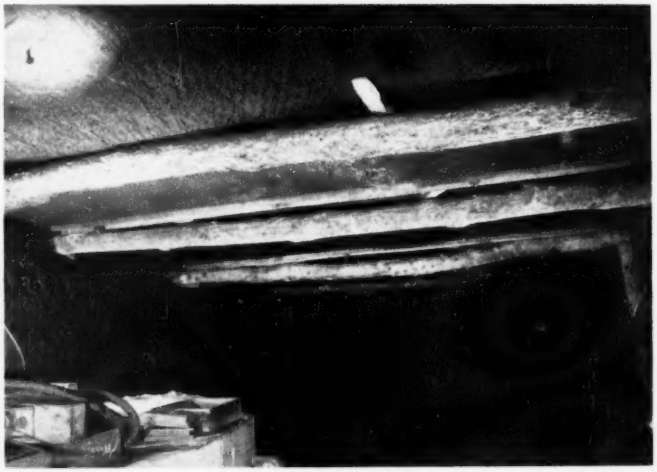
The Permissible, portable air compressor used in drilling bolt holes. The box on front of the compressor is the dust collector.

Aluminum roof jacks are used to hold channel in place while drilling the bolt holes.

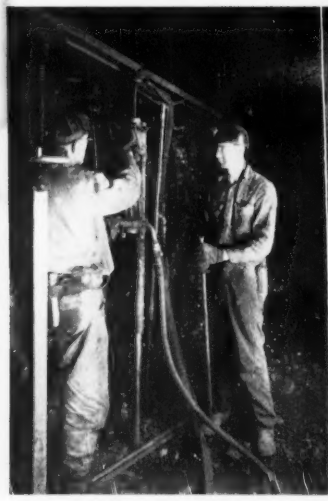
Roof Bolting at the Nemacolin Mine

Roof bolting in the Nemacolin Mine, like in many other coal mines, is a new undertaking. This mine is operated in the Pittsburgh coal seam and like in all mines in that seam, holding of the roof presents a constant problem. The coal averages 7 feet in thickness and is overlaid with the conventional draw slate running from 1 to 3 feet thick, interspersed with thin layers of coal. Above the draw slate is a bastard sandstone.

Nemacolin is an old mine and the old haulways are lined with either brick or concrete and the roof is generally arched. Haulways in working areas have had 1 foot of top removed, then were cross beamed with 6-inch H beams on 5 foot centers and lagged with timbers. With this old method roof could not be held at interesctions for more than a few months.



Bolted roof in development area. Pennsylvania law requires regular timbering along with roof bolting.



The jackhammer drill in action. Channel is in place where it will be bolted.

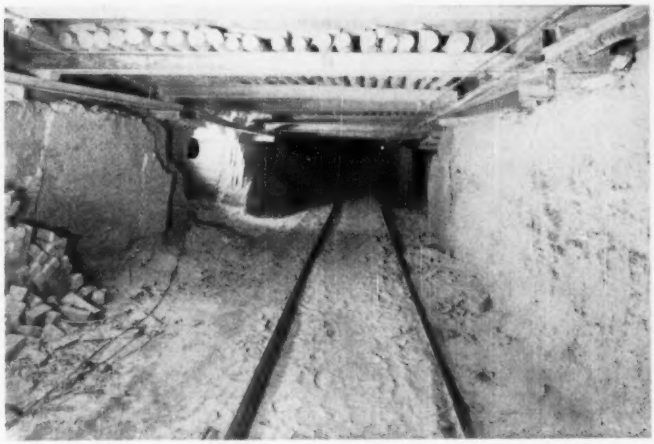
Workman with completely assembled bolt, ready to be placed in hole.

After studying results of roof bolting in mines in the Pittsburgh seam as well as in other seams, this company decided to try that method of holding its roof. First bolting was started on November 2, 1950, in a bad roof section. Bolts 5 feet long are being used in straight-up holes and bolts 6 feet long are used in holes drilled on the angle at each side of the room or entry. In rooms holes are drilled on 4 foot centers, using bearing plates. Haulroads are bolted with channel iron 14 feet long, 4 inches wide, on 5 foot centers, 15 inches from each rib.

A Joy Class W K-83 Model 240

permissible, self propelled underground compressor furnished air for driving LeRoi-Cleveland tappers with 4-inch tapped chuck and 41 inch feed. Nuts are tightened with C-P 365 air wrench. A torque-o-meter is used to spot check tightness of bolt nuts. A Model D-2 Dust Collector, furnished by the Acme Machinery Company of Williamson, West Virginia, is used in drilling the bolt holes. This collector is cleaned every 8 holes and is preventing excessive dust. Star aluminum jacks are used to hold the channels in place when drilling.

More than one of room and entry roof has been bolted at the time this information was gathered and it has been noted that the rate of advancing work has been increased and there have been no falls of roof at bolted intersections.



Roof bolting is replacing this old method of steel cross timbering and lagging with timbers.

More U. S. Coal Is Ordered for Europe As Mines There Fail to Meet Rising Demands

By H. B. Brown, Jr.

Icy temperatures and a noticeable warming up of the cold war have sent Europe's demands for coal far above her current productive capacity, and once again the American bituminous industry is being called upon to make up for the deficiency. Providing coal for coal-producing

(Continued on Page 25)

60-ton carloads of American coal shown moving to the Atlantic Coast for shipment overseas.

New Method of Artificial Respiration

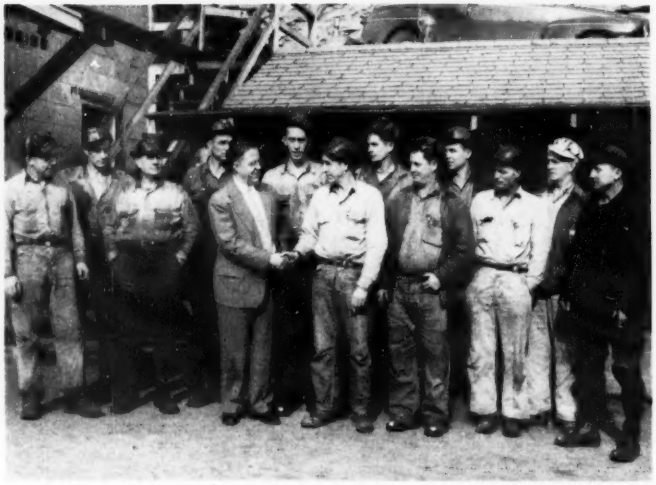
Method Doubles Effectiveness

A new method of giving artificial respiration to restore life, tried out on 109 warm corpses and on nine living men who voluntarily stopped breathing for the experiments, is announced in the Journal of the American Medical Association here.

The method was developed by Dr. A. C. Ivy and associates of the University of Illinois College of Medicine here. It consists of a combination of the Schafer prone pressure method and a hip-lift or hip-roll method.

The "ventilating efficiency" of the prone pressure method taught in American Red Cross and other first aid classes, can be doubled by adding the hip-lift maneuver, Dr. Ivy and associates found. By ventilating efficiency is meant the amount of air that gets into the lungs.

To use the new method, the operator lifts the victim's hips four inches 12 times a minute, alternating this with the push on the chest of the prone pressure method. Since lifting the hips is tiring, after the first crucial few minutes it may be done after every second or third push on the chest. The hip roll was developed as a less tiring, easier method of accomplishing the ventilation of the hip-lift maneuver. To do this, the victim is grasped at the distant hip and "rolled" onto the rescuer's knee and back again.



Proving their interest in increasing safety at the mine where they work, 32 supervisors and key men at the Stanaford No. 2 Mine, The New River Company, Stanaford, W. Va., recently completed a 20-lesson accident-prevention course offered by the U. S. Bureau of Mines. This picture shows Lloyd G. Fitzgerald, fourth from left, congratulating some of the men. Fitzgerald is a mining engineer in the Bureau's Health and Safety Branch and is stationed at Mount Hope, W. Va. Others in the picture, left to right, are Creed C. Cook, Crow W. Va.; Cecil R. Shrewsberry, Daniels; Benjamin H. James, Kilsyth; Robert L. Hatcher, Cool Ridge; Edward W. Pack, Billy E. Richmond, and Roy S. Meadows, all of Beckley; Ralph M. Adkins, Piney View; J. Frank Hancock, and Tom Chaney, both of Beckley; Marvin H. Johnston, Mount Hope; and John Hajash, Beckley. All employees shown here are on the night shift at Stanaford No. 2. Chaney is night foreman.

New Mine Rescue Truck just placed in service by Maryland Bureau of Mines will help in the state's mine rescue and first aid training program. Developed for the bureau by Mine Safety Appliances Co., Pittsburgh, the equipment is especially designed to reach even the smallest mines in the state over narrow, winding roads.

Dr. Ivy and associates compared the efficiency of eight methods of manual artificial respiration and the Eve rocking method in which the victim is rocked on a board like a child's see-saw. They found that the manual methods in which the victim lies prone or on his back and which use both a push and a pull are more effective than those using only a pull or only a push, such as the Schafer method. The prone, or face down, method was found safer.

The study was assisted by a grant from the American Red Cross. Red Cross authorities in Washington stated that they will make trials of the new hip-roll prone pressure method in some of their classes, before adopting it officially. The method now taught ventilates the lungs as well as normal breathing does, Dr. Ivy's studies show. Consequently Red Cross authorities do not believe it wise to change the method yet, especially

(Continued on Page 36)

Side view of the "Package" Washing Plant

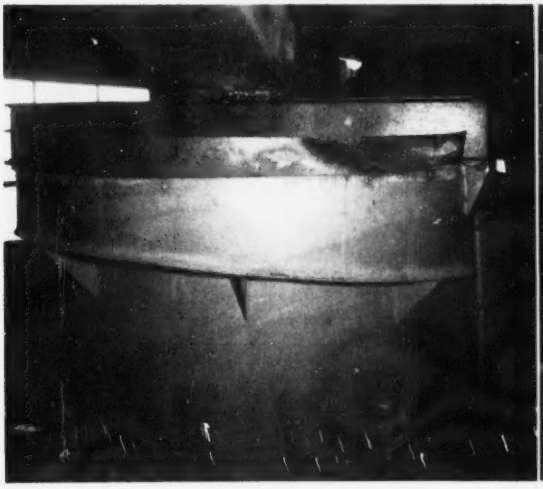
Head-on view of the washing plant, showing washed coal bin.

Carpentertown Preparation Plant of the Sharon Steel Company

The Carpentertown preparation plant of the Sharon Steel Company is located at Carpentertown, Fayette County, Pennsylvania. This is in the Connellsville Coking Region and the output from this plant is fed into beehive coke ovens for making metallurgical coke.

This preparation plant is a 100 tph "Package Plant" built by the Roberts & Schaefer Company. It consists of a 6 foot Hydrotator, a riffle flow screen for dewatering and four 14" Dutch Cyclone tubes. Raw coal from the mine is fed into a hopper which in turn feeds to a

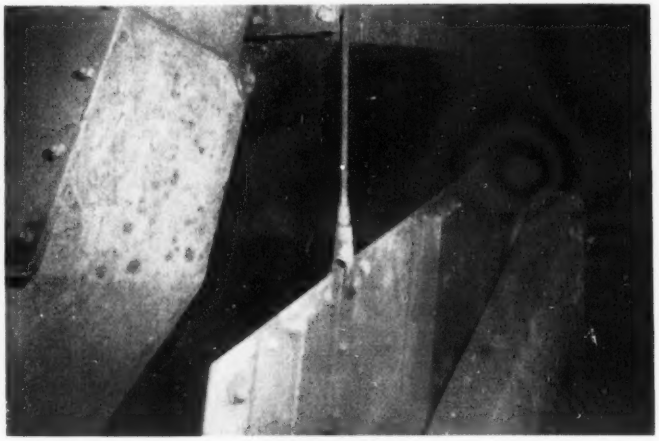
Scraper conveyor that elevates washed coal from washing plant to storage bin that feeds the lorries.



The six-foot Hydrotator.

Dutch Cyclone Cones.

Jeffrey Flextooth crusher which reduces the run-o-mine product to 2" by 0. Coal from the crusher falls into a Hewitt rubber belt for conveying to the Hydrotator. Slack lime is fed onto the coal on the rubber belt, from a small hopper, in quantities required to neutralize sulphuric acid created in the washing process. The lime hopper is filled once a shift. It has been found that savings effected by the use of lime far exceeds replacement costs of acid eaten metal.



Riffle-flow dewatering screen.

Washed coal from the Hydrotator passes onto the riffle flow screen for dewatering. Refuse is elevated by bucket elevator and discharged into a refuse bin from which it is trucked to the refuse pile. Effluent from the dewatering screen is pumped back through the Hydrotator. About one fourth of the water is pumped through the Dutch Cyclone Cones for desliming. Discharge from the Dutch Cones goes onto a low head drying screen which discharges into a chute for mixing with the coal from the dewatering screen. Both these products are fed onto a scraper conveyor and elevated to a storage hopper from which it is fed into lorries that take it to the beehive ovens.

In order to insure the coke ovens a steady flow of coal, provision has been made, by storing raw and washed coal in piles near the washing plant. If the raw coal source should cease, trucks haul from the raw coal pile and haul to the cleaning plant. If the cleaning plant should stop for any length of time, trucks haul from the washed coal pile to a small hopper from which it is conveyed to the scraper conveyor that takes it to the hopper for feeding the lorries.

Over-all view of the Bee-hive coke ovens.

DELTRON . . . Does it Again

With "Its" ALL NEW - EFFICIENT - SAFE and ECONOMICAL Laboratory Tested

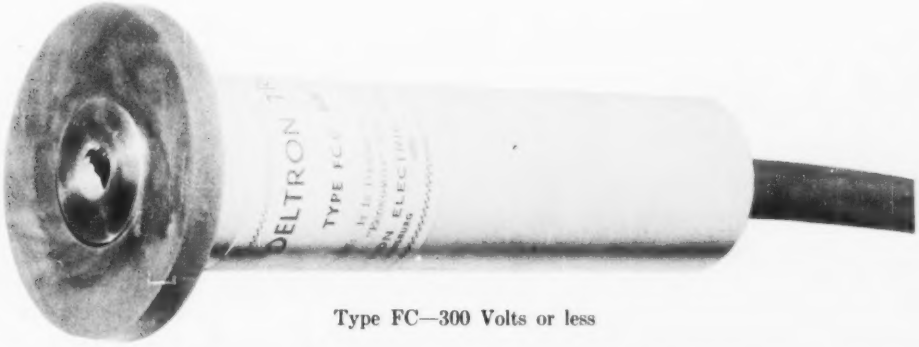
TYPE FC TROLLEY TAP AND ECONOMITE FUSE

Satisfying a demand for "Top Quality Trolley Taps" and fuses at prices commensurate with intrinsic value and simultaneously increasing their efficiency and durability during a time of soaring prices is our modest contribution to the efforts put forth by the mining industry to reduce costs.

By constant research coupled with a sincere desire to help conserve copper which is so vital in the present emergency, Deltron has designed the all new Type FC Trolley Tap and fuse combined to give you "The Best For The Least" in their class.

Copper has been entirely eliminated in the design of the Powder Packed Trolley Tap Fuse and it is also decreased to the absolute minimum in the all new Trolley Tap connectors.

Deltron's new fuse, which is in a great measure part of the Type FC Trolley Tap, has an automatic pressure release incorporated in its design. Gases generated by thermal decomposition, as when the fuse element melts under load, are released through the ends of the fuse cartridge, subsequently, further gas expansion takes place in the Trolley Tap area surrounding the fuse cartridge until atmospheric pressure is reached, thus, releasing high pressure gases safely to the surrounding atmosphere.

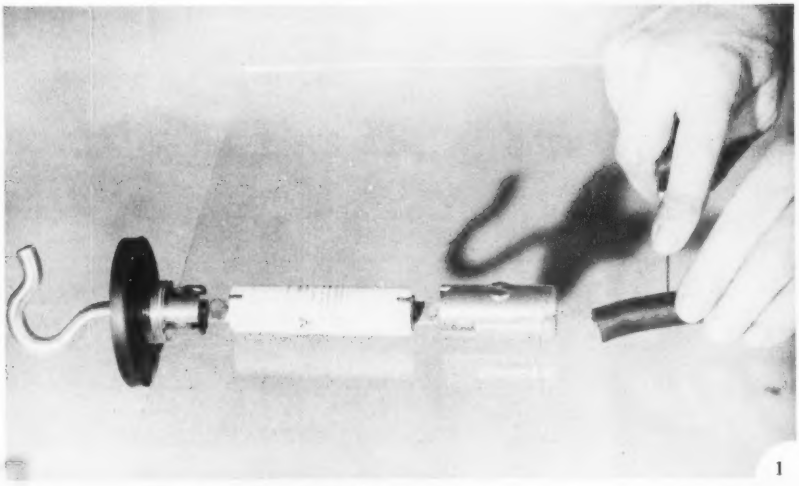


Type FC—300 Volts or less

DELTRON ELECTRIC PRODUCTS, Inc.

North Margaret Street Ebensburg, Pennsylvania

Patents Pending



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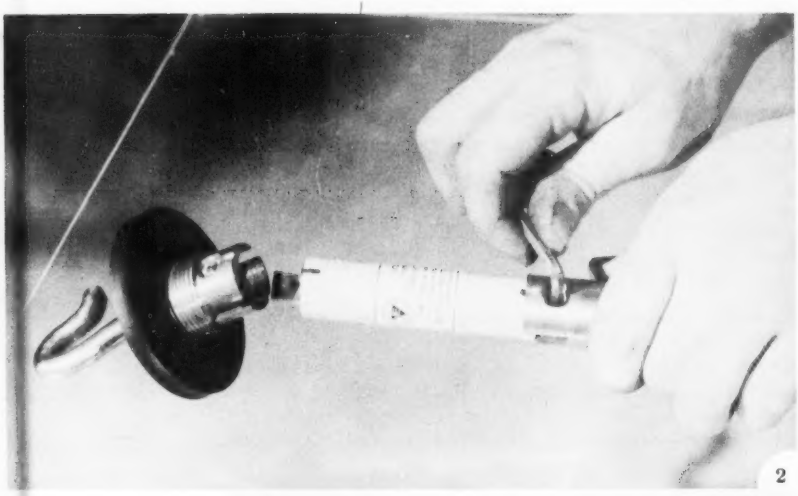

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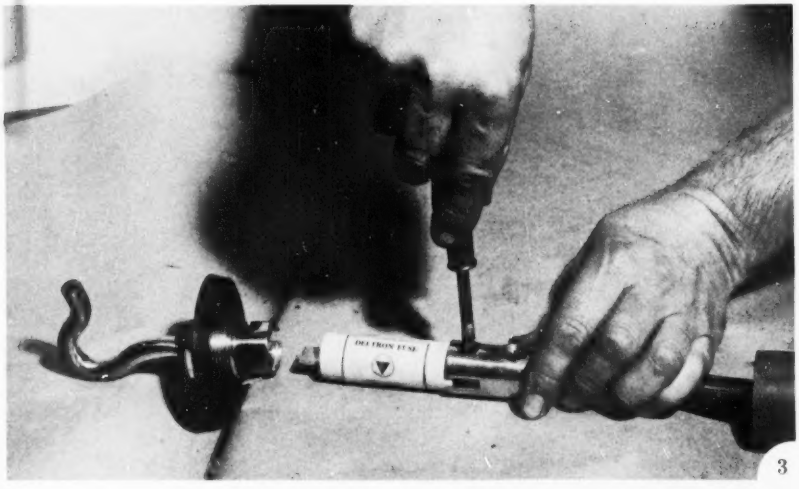

3

It's a simple

To atta
DELTRON FUSED

1. First, disassemble the through the plastic t insulation from the e and 1¾″ for Type FC
2. Insert the bare cable screw the connector s end is firmly seated i the purpose in the l
3. Assemble the fuse in nector, then screw t down firmly on the en
4. Repeat the process
5. Fuse completely assem
6. The Type FC 300 vo FC-1 600 volt or less.

Machine runners, motorm will experience no difficu Type FC or FC-1 Trolley simple in construction t or skill is not required fuse within the tap. This by one-half that consume types. These Taps are pro release vents in the cable

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ch No. 1 Cables to TROLLEY TAPS

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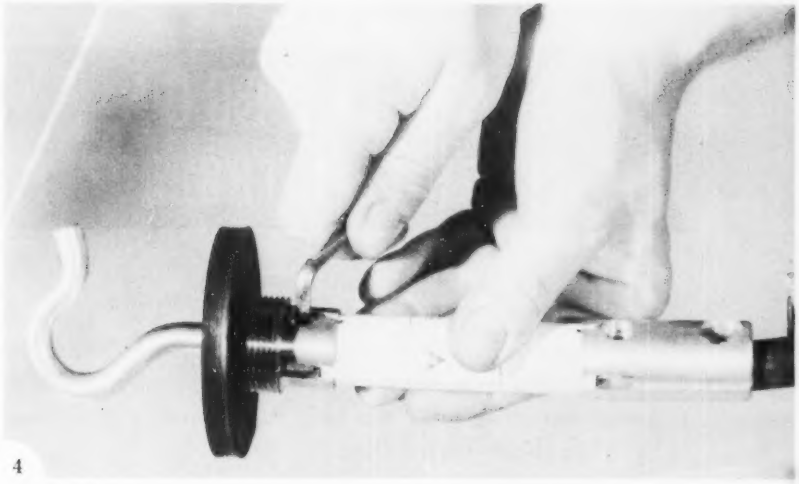

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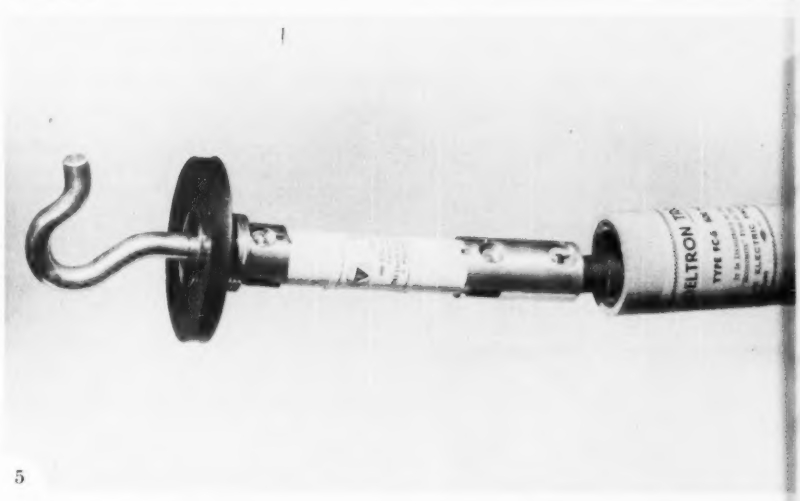

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6

DELTRON
TYPE FC-1 TROLLEY TAP

Designed especially for gathering locomotive service, where the going is tough, the Type FC-1 is equipped with a dual cable connection to withstand the whipping action of the trailing cable. It is made rugged to cope with abnormal use, yet light in weight for convenient handling.

Uniting all the good features inherent in the economite fuse which when attached in Deltron's all new Type FC-1 Trolley Tap combines to give you a rugged light weight Trolley Tap designed especially for long strenuous service.

Type FC-1—600 Volts or less

DISTRIBUTORS LOCATED IN ALL PRINCIPAL CITIES THROUGHOUT THE COAL MINING FIELDS IN THE UNITED STATES AND CANADA

DELTRON ELECTRIC PRODUCTS, Inc.

North Margaret Street Ebensburg, Pennsylvania

Patents Pending

BENSHOFF PRINTING CO.
JOHNSTOWN, PA.

More U. S. Coal Is Ordered for Europe As Mines There Fail to Meet Rising Demands

(Continued from Page 21)

countries is an old story for this nation's mines, but today's situation places new emphasis on the greater efficiency and general superiority of the United States coal industry over that of every other nation.

First of the recent calls for emergency supplies from across the Atlantic came last fall when Great Britain's socialized coal industry began to show a dangerous lag in production schedules. Until then the vast amounts of American coal pouring into Europe since V-E Day were gradually decreasing as the mines of England and the Continent slowly recovered from wartime adversities.

By November, 1950, the domestic stocks in England had diminished to a point where the Minister of Fuel and Power had to admit that Britain's mines—after four years of state ownership—were unable to meet demands and that imports alone could provide protection against a severe winter. In December is became evident that England would not be alone in her request for U. S. coal, for failure of the British to meet export commitments was disturbing the whole economy of the rest of the Continent. The demands elsewhere in Europe grew when industrial activity was stepped up as a defensive measure and the advent of winter brought higher consumption in electric utility plants, commercial plants and buildings, and homes.

Western Germany, which was looked upon to supply substantial amounts of coal to neighboring countries, suddenly found that, because of the added burden placed upon her, exports would have to be curtailed if a domestic shortage were to be averted. Ireland served notice that she would need 100,000 to 150,000 tons of American coal in view of the gloomy picture in Britain, the regular supplier. Italy announced that sharp power cuts and rationing for industry were inevitable unless foreign fuel were made available. From The Hague came word that Netherlands' output of coal was 8 per cent below expectations and that the country's economy was imperiled because of declining imports from Germany and Great Britain.

With the general situation becoming increasingly more alarming, a meeting to discuss the shortages was held in Geneva on December 18 by the United Nations Economic Commission. Representatives came from Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Switzerland, United Kingdom, Yugoslavia, and the United States. When total supplies were calculated and subtracted from total needs, figures showed a certain deficit of five million tons of coal and one million tons of coke for the first three months of 1951.

Members of the UN group concentrated on the theme of "minimizing the shortages," and attempts were made to establish standards for economizing in the use of solid fuels, to set up patterns of distribution for all of Europe, and to stimulate coal output. But the key point in the recommendations was that as much coal as possible must be brought in from the United States without delay.

Whether the American coal industry would be able to supply the amount required by the European countries did not have to be considered. This country's bituminous mines produced 512 million tons in 1950 and are in a position to increase that output by upwards of 100 million tons per year if need be. The American coal industry is at a higher level of productive capacity than ever before. Since the close of World War II the industry has not only modernized existing plants and facilities, but also has opened or placed in development a total of 220 large mines, each with a daily capacity of 500 tons or more. Some 800 smaller mines have also been opened in this country, giving these new ventures a total potential output of 280 million tons a year and more than offsetting mines that have been worked out, retired for obsolesence, or closed for other reasons.

But lack of shipping facilities has been the one obstacle to rushing sufficient relief across the Atlantic, and this factor—plus Europe's ability to buy or to obtain further credit—will determine whether the United States will send the estimated 15 million tons required by England and the Continent during the current year.

At the request of the Economic Cooperation Administration, the Maritime Administration in January put 27 Victory ships, previously withdrawn from the mothball fleet and overhauled, into service to transport coal and grain to Europe.

New Mining Equipment at Crucible Fuel Co.

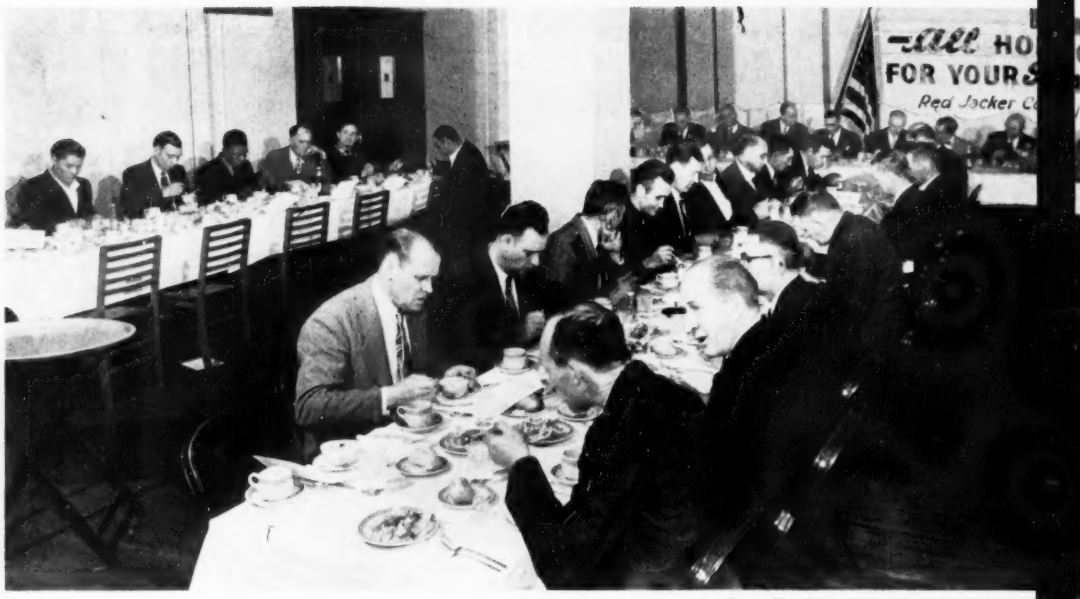
(Continued from Page 18)

the-track type and consists of Joy Model 10 Universal cutting machine on rubber tires for off-the-track mining. Cutter bar is 10 feet long and cutter chain is equipped with Joy Sulmet tungsten carbide tipped bits. Loading is done with a Model 665 Goodman loading machine, mounted on Caterpillars, with head and rear conveyor swings. It is said that this machine will load 700 tons a shift in a properly organized working area. Goodman Model 570 shuttle car, 54 inches in height, was working with the loading machine in driving air courses. The shuttle car is 4-wheel drive 4-wheel steer, driven by two 10 hp motors. It has hydraulically booster steering and hydraulic brakes and cable reel take-up. Capacity is 264 feet, water level. With 12 inch average topping, capacity is 294 feet. Tires are 10:00 x 15—14 ply, hard rock lugged. Driving differential is non-spin type. A new Joy rubber tire mounted timber setting machine will work with this off-the-track equipment.

The high tension lines at this inside 300 K.W., 275-Volt motor-generator set substation enter the building from the borehole through a G-W Electric Products junction box. The switching equipment is of the semi-automatic type with a 1600 Ampere, Type KSA, I-T-S-Automatic Reclosing Circuit Breaker protecting the D-C end.

Just outside the substation, and adjacent to the main haulway, two 1200 Ampere Type KSC, automatic reclosing sectionalizing circuit breakers protect the inby and outby circuits from short circuit hazards and provide better operating continuity. This installation is in conformity with Bureau of Mines sponsored recommendations.

All the output is loaded into 7-ton all steel mine cars. At the shaft bottom these cars are fed into a rotary dump under the control of an electric eye. Coal in the bin at the bottom of the shaft is fed into a Hewitt rubber belt which carries it to a large blending bin on the surface. From this blending bin it is fed to a Roberts & Schaefer washing plant.



Overall view of the banquet, showing

Annual Labor-Management Dinner at Red Jacket Coal Corporation

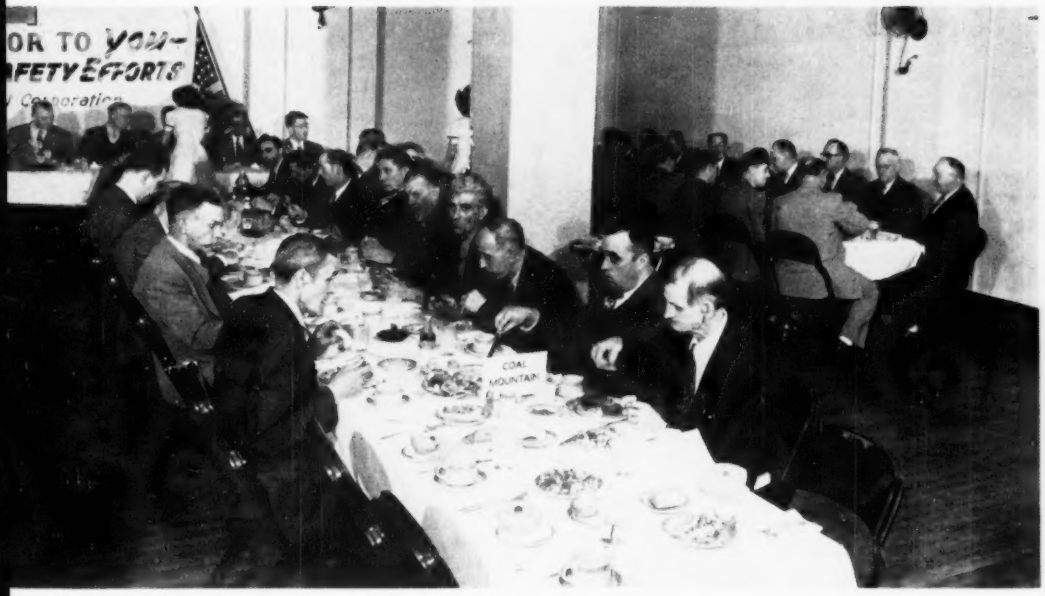
An Annual Labor-Management safety dinner of the Red Jacket Coal Company was held at the Mountaineer Hotel, Williamson, West Virginia. This dinner was attended by officials of the UMWA, U. S. Bureau of Mines, West Virginia Department of Mines, Virginia Division of Mines and distinguished guests.

The occasion was held for the purpose of honoring the part played by members and officials of UMWA in promoting safety and accident prevention at mines of the Red Jacket Coal Corporation in 1950.

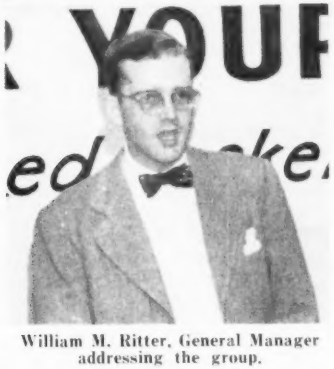
J. J. Plasky, Training & Safety Director, Red Jacket Coal Corp, said: The past record shows what can be accomplished in the reduction of accidents by putting forth real effort. The honor paid to you here, for your safety efforts, is important but it does not compare to the gratitude of your neighbors and the people of your community for the lives you have saved. We all can increase our safety efforts and the benefits to us will increase proportionately.

Paul D. Ritter, President, addressing the gathering.

The speakers table. Left to right: F. B. McChessney, J. J. Ardigo, C. M. Meadows, E. E. Quenon, R. A. Ison, A. V. Miller, Wm. A. Ritter, Chas. Kiser, J. J. Plasky, W. H. Tomlinson, Paul D. Ritter, Ranson Kirk, Gus Allison, Young Lawson.



attendants from the various branches.



William M. Ritter, General Manager addressing the group.

Virgil Harvey, President, Coal Mountain Local, UMWA, said: Safety is the most important work. We will put forth our best efforts and cooperate 100%. The proof of accident reduction is in the practice of safety. We should all take a serious interest in this program. We have had a splendid record and more people could take a lesson from the Red Jacket safety committees and safety department in the prevention of accidents. When situations develop which require joint efforts then it is best that cooperation is shown which will often ease the situation.

Gus Allison, Field Representative, United Mine Workers of America: The proof of practicing safety in the mines is shown by the report of the accident reduction at Red Jacket.

William Daugherty, President, Wyoming Local, UMWA: This is the third safety dinner I have attended and, being a miner for twenty-two years, I know that we must keep on preaching until safety ideas stick. We must keep on preaching until we all practice safety. You, the management, continue to preach safety, and we will continue to practice safety.

E. E. Quenon, Chief, Accident Prevention and Health Division, U. S. Bureau of Mines: One hundred and thirty-three men were killed in seventeen counties in West Virginia in 1950. Most of these fatalities could have been prevented. Inspections alone are not enough to prevent accidents. Safety education must be stressed and more and more men induced to take accident prevention courses. We need both the company officials' and UMWA cooperation in this. We will have more men available in the near future and it is my hope that everyone concerned will avail themselves of this fine safety training. The U. S. Bureau of Mines is pleased with the safety record of the Red Jacket Coal Corporation and there is no doubt that such efforts helped in making the safety record for the industry as a whole. However, we still have a lot to do to reduce accidents. We hope that by continued cooperation, as shown here, we will better our 1950 record and I hope that we see the same men here next year.

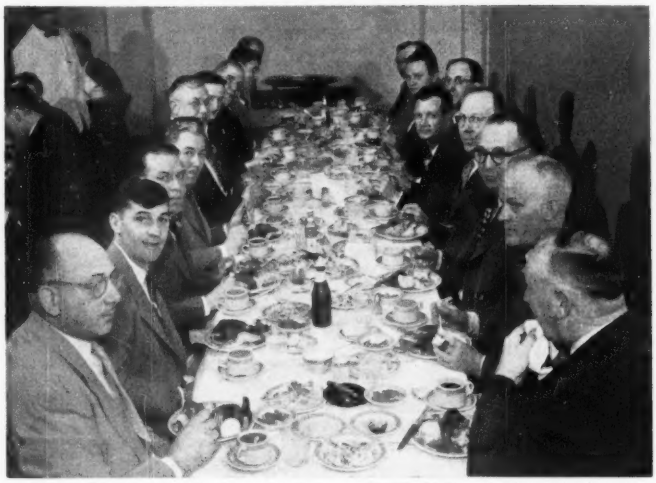
C. M. Meadows, Inspector-at-Large, W. Va. Department of Mines: I want to take my hat off to the men of the Wyoming mine because I know the efforts these men have put forth to reduce accidents. It is much more important at the present to conserve manpower and prevent accidents because of the international situation.

Tom Owens, President, Keen Mountain, Local, UMWA: Our district is proud of this safety work. I appreciate the efforts of the members of our local and they are enjoying the fruits of these efforts because our people are alive. It is a fine thing to be able to take part in the accomplishing of a good safety record. I have seen men killed in our mines, and I know that our safety efforts are now accomplishing results. I want to cite an ex-

J. J. Plasky, Training and Safety Director, Red Jacket Coal Corp., addressing the group.

ample of how we go about cooperating in the safety movement. I warned some of our motormen not to operate the mantrips too fast. I explained that they were responsible for the safety of the men. Certain of these motormen resented what seemed to be interference in their work. However, after a few days, these men realized that by operating the trips at fast speed they might have injured or killed someone. Safety is like a tree. It must take root, and be nurtured, to grow. Safety must, in a manner, be nurtured by all men so that it also grows. I can assure everyone present that we will continue our efforts in safety work because we realize its value to the health and happiness of our brother members.

W. H. Tomlinson, Supervising Engineer, U. S. Bureau of Mines: I came back to West Virginia for inspiration and to renew my spirit in accident prevention. Meetings such as this give a man renewed spirit to carry on in accident prevention. If, twenty years ago, someone would have told me that I would attend a meeting where an operator and UMWA officials would get together to discuss safety matters, I would not have believed it. You have not left it up to others to reduce the accidents in your mines but have done the job by cooperation. I have heard the best speeches in a long time from the UMWA officials here present. What impressed me most about their talks was their sincerity. It takes a lot of organization to make a success of safety. By meetings of this kind, we see it in practice, and we shall reap good results. I wish I could say that we hold such meetings in my district. My work would be a lot easier. We offer our lives after a disaster to take out the dead. We should be willing to offer our efforts before an accident occurs.



At this table are: left side: Ott Cravan, D. W. Halstead, Ray Woodward, Joe Gillespie, E. F. Smith, D. I. Haga, J. F. Maurice, S. H. Turner, Julius Howell. Right side: E. S. Ferrell, E. S. Burleson, Tony Webb, C. H. Williams, Mike Ferrell, Chas. Milan, Ty Hammond, G. F. Davis, J. A. Damron.

Charles Kiser, District representative United Mine Workers was toastmaster

Mack Davis, Supervising Inspector, U. S. Bureau of Mines: I did not come a hundred miles for a steak. I came here to honor you for a job well done. I want to leave some points for your consideration. Would you as a mine worker stop a fellow worker from committing an unsafe act? Your obligation to man and to God as well as to UMWA must make you answer yes. Your obligation to humanity is greater than to any organization. I have noticed the Federal inspection reports of some of your mines and the violations of the Federal Code are practically non-existent. We realize this took cooperation. I hope you keep it up.

Tom Osborne, President, Mitchell Branch, Local UMWA: If all segments of management put forth as much safety effort as the UMWA, we feel that our safety record would

Supervising Inspector of the U. S. Bureau of Mines addressing the group. Sitting are, left to right: Lex Trunko, Federal Mine Inspector; J. T. Whalen, Supervising Inspector, U. S. Bureau of Mines; Clayton Ball, Consulting Mining Engineer, Herbert Jewell and Mack Davis.

be better. We feel that we are justified in receiving our honor for the safety records.

Paul D. Ritter, President, Red Jacket Coal Corporation: Speaking officially for the company and Board of Directors, I assure you that we are 100% in favor of the safety program. Several weeks ago our foremen were honored at a similar dinner and they were the first to admit that whatever safety records they have made were made possible by the crews who worked for them. At that meeting, Keen Mountain received a trophy for the best safety record within the company. The trophy in itself is similar to trophies given in baseball, football, etc. However, this trophy was far more important, for it was given because of lives that were saved and accidents that were prevented. All employees of Keen Mountain should be proud of that trophy because it was through their combined efforts that they won it. As you near the top of a hill it becomes harder to climb upward. It is the same with safety. It is going to take harder work and more sustained efforts to continue our upward progress. I give you my pledge that company safety efforts will be continued.

Arthur Hardy, President, Junior Local, UMWA: The best way to promote safety is to follow good safety practices and thereby enjoy the fruits of our labor.

Ransom Kirk, Field Representative, United Mine Workers of America: We are not doing as well as we should or could do. There is no distinction in this group and, if all present worked toward the same aim, there is no doubt we could better the safety record. We have heard the president of a local describe the action he took to prevent workmen from committing unsafe acts. I also have criticized men for not working safely but I did not lose their friendship. You should do everything in your power to prevent a man from getting hurt or killed. If he does not comply with your suggestion you should take positive means to make him work safely. In numerous meetings with you men I am going to talk more about safety.

A. U. Miller, Supervising Engineer, U. S. Bureau of Mines, now retired: There are very few if any meetings of this kind and it is regrettable. I would rather attend a meeting of this kind here, with the UMWA and an operator getting together in an effort to reduce accidents, than any other. Everyone envies a good record and some even would cast doubt as to how it was achieved. They do not care about a bad record. You have reached the point where it is going to take more and more effort to prevent accidents. Most of the accidents now will be caused by unusual circumstances. You will have to be more

W. H. Tomlinson travelled 400 miles to attend the gathering.

alert and use more foresight to anticipate such unusual conditions. However, that should not discourage you because we have just heard it said that 116 sections at the Red Jacket mines were operated without a lost-time accident for one or more years, and if this number can be worked without accidents then there is no reason why the rest cannot.

Charles Kiser, District Representative, United Mine Workers of America, and toastmaster of the meeting: Your actions in the mines are instrumental in any safety record, good or bad. It is up to those present to take the message back to the men about the things that have been said here. It means much to you men and your families. Safety should be a primary consideration in preventing accidents. There would be fewer widows and orphans and fewer broken bodies, if we would take these messages back to our men. At these meetings we could take inventory and find that there are no vacant chairs because of men being killed, and all because of your efforts. Greater love hath no man than he lays down his life for a friend. That is not required of you but your safety efforts are the means by which we are to make further progress. Instead of resting on our past laurels, which have been good, it means that there should be no let-up on safety if we want to make more progress. You have heard some fine talks, especially from local officials, and particularly the president of the Keen Mountain local, and now we should surely take these messages back to our men. We have only scratched the surface in this safety movement but already many lives have been saved. I could talk about safety for hours, but all the talk done here should lead to action in the mines which will reduce accidents. To show you how important this meeting is, I want to call your attention to the fact that Mr. Tomlinson and Mr. Miller traveled over 400 miles, not to eat a steak dinner, but to pay honor to you men for your safety record.

William M. Ritter, General Manager, Red Jacket Coal Corporation: The prime purpose of this meeting is to honor you men and to create an incentive for further efforts in the prevention of accidents. The greatest good to be taken from this meeting is not what already has been accomplished but the recognition that there is yet a lot to be accomplished. We are proud of our past record but the fact remains that there are still too many accidents and still more work to be done. We should take back the enthusiastic desire to increase efforts in the safety program. As individuals or groups we are not doing absolutely all we can. It is easy for us to talk here, but it is not easy for safety committees and management to reduce accidents because it is an inclination of human nature not to say anything to one who may be doing an unsafe act. To keep quiet is an easy way out. So, when we see a man committing an unsafe act we may fail to call his attention to it as the easiest way; but, to get him to work safely, is a more difficult way. I am sincere in saying that we want to get rid of the accidents in our coal mines but to do so we need the cooperation of many people including company officials, UMWA officials, W. Va. Department of Mines, U. S. Bureau of Mines, and in fact all of the 2,700 employees of the Red Jacket Coal Corporation. In spite of laws or rules you men also have the responsibility to help reduce those accidents. We are proud of what has been accomplished, but we know that more can be done. It is a human relations job to sell the 2,700 members of the Red Jacket "family" the idea of safety, and in doing so we can then say, 'well done.'

Facing the camera, left to right: Robt. Le Corchick, Electrician, Robena Mine; Edward Scullion, electrician, Gibson Mine; W. W. Darne Dartnell, Superintendent, Gibson Mine and Andrew Le Corchick, Inside master mechanic, Robena Mine.

Left to right: unknown, Guy Lewis, underground mechanics boss; Arthur Taylor, chief wireman; and George Pete, all of the Mather Collieries.

Carmicheals Meeting of the Electro-Mechanical Maintenance Association

How to select the right pump was the subject of a recent meeting of the Carmicheals, Pa. Branch of the Electro-Mechanical Maintenance Association and has been presented by Roy H. Werner of the Harris Pump & Supply Co.

Following are some of the highlights of this two day meeting:

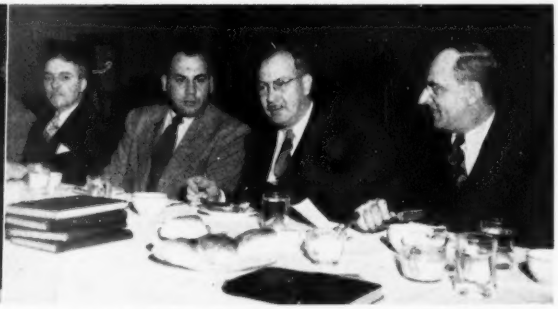
In the broad sense, there are only two facts that must be known in order to make a pump selection. One is the capacity—the other is the total head. In this case we have the first—GPM. The second is somewhat more difficult, and made confusing by the variety of terms used. You are likely to hear of various kinds of head, for example: the static head, the total dynamic head, friction head, suction head, and just plain head. Let's take these various terms and see what they actually mean:

Shephen McCann, right, presenting prize to the person most in the limelight at the meeting, Mr. Rollins Roberts, who became the father of a baby boy that day.

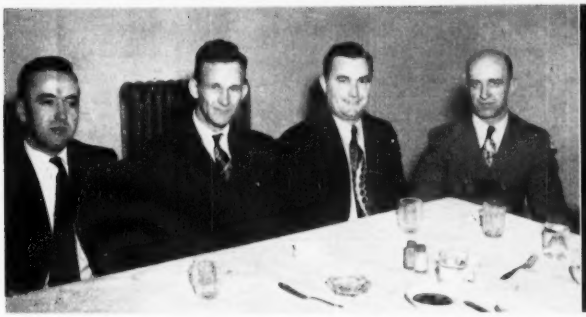
Static Head is the difference in elevation between the water level on the suction side of the pump and the highest point of discharge.

Friction Head is the pressure needed to overcome the resistance of the water rubbing on the inside of the pipe—and each foot of fric-

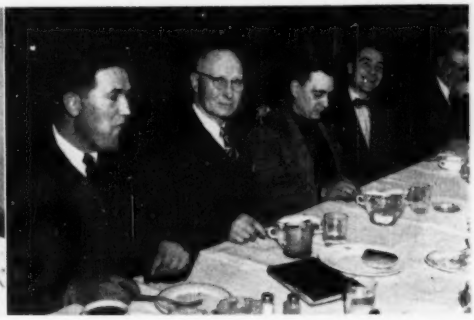
Left to right: Stephen McCann, Rev. Warner G. McCurdy, and George A. Walter, Master mechanic Buckeye Coal Co.



Left to right: Robert D. Rennie, President of the Branch; Roy H. Werner, principal speaker, representing Harris Pump & Supply Co. Howard Miller, Master Mechanic, Crucible Fuel Co. and John Bannerman, Jones and Laughlin Steel Co., master mechanic Shannopin Div.



Representing Warwick Mine, Duquesne Light Co. left to right: Gale W. Minor, Mechanic; Max Beall, Mechanic; Woodrow Husk, electric welder; Ross Allison, mechanic.



Left to right: James E. Brenhwell, Alex G. Keeney and John Switzer, both mechanics, of Issabella and P. R. Meredith, General Electric Co.

tion loss is equal to one foot of vertical lift.

Suction Head may mean either the lift on the suction side of the pump or difference in elevation—or it may mean the pressure or difference of elevation **above** the pump on the suction side. It is not a term ordinarily used in mine work.

The term we have left until last, **Total Dynamic Head**, means the difference in elevation plus friction losses, plus discharge pressure at the end of the discharge line if pressure is necessary.

Quite frequently pump users become confused and have the impression that the weight of water in a long run of pipe or a large tank increases this head. Aside from the friction losses, these long runs of pipe or large tanks have absolutely no effect on the static head.

If you were to place a pressure gauge at the bottom of a tank 50′ high and 50′ in diameter, the pressure gauge at the bottom would read exactly the same as a pressure gauge at the bottom of a tank the same height and 10′ in diameter—or, for that matter, if it were a piece of pipe 1″ in diameter 50′ high. A pressure gauge at the bottom of a tank will read the same on all four columns regardless of the diameter.

Please keep clearly in mind that the gauge is made so that it measures pressure in pounds per square inch. It measures only equivalent of the weight of a column of water 1″ square and indicates 1 lb. for every 2.3′ of height of that column of water. We need not necessarily remember how this is done, but a simple way to remember is to suppose you have a column of water 1″ square, 2.3′ high, frozen and placed on a scale. It would weigh exactly 1 lb. I mentioned previously that it would make no difference—even if we were pumping into a large tank, we would still only consider the elevation from the water level on the suction side to the top of the water at the discharge point. It makes no difference how large this tank or body of water is—we still only have 1 lb. per square inch for every 2.3′ of elevation.

The next step in this operation is to find out the size of the pipe we are to use for this 1000′ line or, if we have pipe available we must use, to know the friction loss in it.

Friction and Pipe Sizes—Too much importance cannot be given to the question of the proper size of pipe. I will show you where this pipe size can vary according to the length of pipe and possibly to the type of pump used. We have all had the experience of standing on a bridge and watching a small, swiftly running stream flow under us. We have all noticed how much faster the water flows in the center than on the sides, but did you know it is due to the drag of the shore, or the friction on the side that slows it up at the edges?

If this stream were not more than shoulder deep and we walked across it, we would find at the fast flowing center—that the speed was greater at our shoulders than at our feet, which would indicate that the friction of the bottom of the bed of the stream also puts a drag on the water.

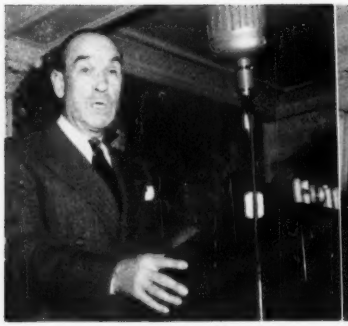
Now suppose the entire bed of the stream were a sheet of metal and we took the edges of the metal or the shore line and drew the whole thing together. We would have a pipe and—if there were just enough water to fill the pipe, the drag would be not only on the bottom of the bed or on the shore, but at the top—and, in fact, the entire inside surface of the pipe.

In pulling the metal around the stream, we have made the pipe just large enough so the volume of water passing down the stream exactly fills the pipe. The pipe is so arranged that all the water coming down the valley goes through this pipe at the rate of 100,000 GPM. A thunder storm comes and instead of 100,000 GPM running down the valley, the stream is swollen to 200,000 GPM.

Adding another hundred thousand GPM to the hundred thousand GPM rushing through the pipe, means that the velocity must be increased and that the water is pressing harder against the sides, with the result that there will be more friction.

I mentioned that also the type of pump might have some effect on the size of pipe used. If your mine is one of those using self-priming centrifugal pumps, you will in all probability try to keep the total head down to approximately 50′. In this particular case, you could barely get by with 2½″ pipe inasmuch as the friction loss would be 33′ to which would be added 23′ of static head to make a total of 56′.

If you considered the possibility that the pump might have to be moved back further and a few more hundred feet of pipe added, then most certainly it would be necessary to use 3″ pipe in order to keep the head down below 50′. On the other hand, if you are using a piston pump where the normal operating pressure is 50 lb., or 50 lb. multiplied by 2.3, giving you 115′ head—then the 2½″ pipe would be ample, even for anticipated changes.



W. L. Coulter, Retiring President of the Institute.

The Very Rev. N. R. Moor, was the principal Speaker.

G. A. Shoemaker, New President of the Institute

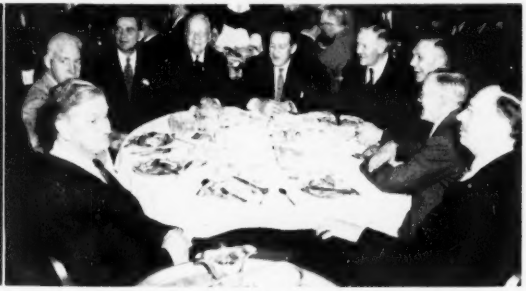
Sixty-Fourth Annual Dinner of the Coal Mining Institute of America

The Sixty-Fourth Annual Dinner of the Coal Mining Institute of America was held in the William Penn Hotel, Pittsburgh, Pennsylvania, on December 14, 1950. This dinner was presided over by Mr. M. L. Coulter of the Clearfield Bituminous Coal Company and retiring President of the Institute as chairman. Toastmaster was George H. Deike, Sr., President of the Mine Safety Appliances Company. The speaker of the evening was the Very Reverend N. R. H. Moor, Dean, Trinity Cathedral, Pittsburgh, Pennsylvania. Arrangements were under the direction of John T. Ryan, Jr., of the Mine Safety Appliances Company.

This organization was started in Monongahela, Pennsylvania, 64 years ago and has grown to be the largest coal mining institute in this country.

Left to right: H. C. Lusk, Manufacturer's Representative; H. C. Seckler, H. C. Frick Coke Company; Art Waldman, H. C. Frick Coke Company; H. R. Johnson, Mine Safety Appliance Company; J. A. Boyle, H. C. Frick Coke Company; J. L. Sullivan, H. C. Frick Coke Company; J. C. Durfee, H. C. Frick Coke Company; J. L. Laubach, H. C. Frick Coke Company.

Left to right: Gray Sensenich, Irwin Fdry. & Mine Car Corp; L. W. Scott; Wm. A. Davis, Purchasing Agent, Stephen Krickovic, Engineer, Eastern Gas & Fuel Asso.; S. T. Alsbrook, Chester Sensenich, Irwin Fdry. & Mine Car Corp; J. A. Erskin, Electrical Eng. Eastern Gas & Fuel Asso.; J. W. Kotchin, Westinghouse and W. G. H. Latham.

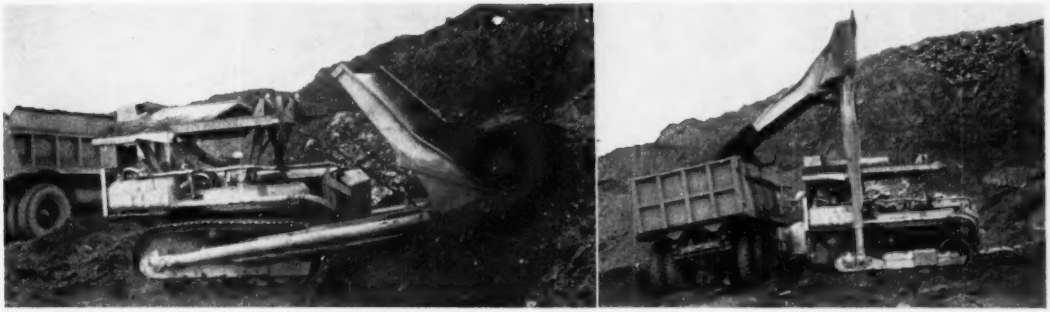


Left to right: R. M. Montieth, Director Safety, Weirton Coal Co.; C. C. Haganbuch of Hanna Coal Co.; L. E. Young, Consulting Engineer; E. H. Johnson, Kennametal, Inc.; Harold B. Ewoldt, Assistant to President, Copper Range Co.; M. D. Cooper, National Coal Assn.; W. D. Turnbull, Kennametal, Inc.; N. G. Alford, Consulting Engineer; David R. Mitchell, Penn State University; and Elmer C. Anderson, Chief Engineer, H. C. Frick Coke Co.

Caterpillar D-13000 Diesel engine drives this dragline at the Coal Valley Mining Co., Coal Valley, Alberta, Canada.

Caterpillar D-8 tractor with No. 80 scraper, strips overburden at Coal Valley Mining Co., Alberta, Canada.

Coal Valley Mining Co., Ltd., Coal Valley, Alberta, Canada, uses Caterpillar Diesel DW-10 tractors and W-10 wagons to haul coal on day shift and rock at night.

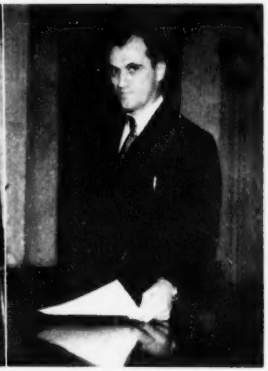


Two views of a Caterpillar D-4 tractor equipped with Athey Mobiloader loading culm from anthracite bank at Gilberton, Pa.

The Hon. Richard Maize, Chief, Dept. of mines, Pennsylvania.

J. J. Forbes, Chief, U. S. Dept. of Health, Safety and Accident Prevention.

V. W. Derringer, Labor Commissioner, Central Penna. Coal Operators Assn.



C. A. Rysek, Chairman of the Barnesboro Council of the Holmes Association and Chairman of the Meeting.

Ebensburg Meeting of the Central Pennsylvania Joseph A. Holmes Association Councils

The Central Pennsylvania Councils of the Joseph A. Holmes Safety Association held a meeting in Ebensburg on the evening of September 8, the night before the Pennsylvania State-Wide Safety Day. At this meeting Mr. J. J. Forbes, Chief Department of Health, Safety and Accident Prevention for the United States Government, recalled times back 25 years when he and the late G. W. Groves went out to the Orient Mine in Illinois to do rescue work when they were in the employ of the U. S. Bureau of Mines in Pittsburgh. There they decided to form the Joseph A. Holmes Association.

Mr. Forbes said he believes in the ideas involved in the Holmes Association. He told of the organization of the Second Council in Allegheny County, Pennsylvania, in 1928, and of the organizing of the Third Council at Cresson, Pennsylvania.

The Honorable Richard Maize, Chief, Department of Mines, Pennsylvania, told of when he traveled long on winter nights in helping Mr. Forbes and Mr. Groves in organizing the early councils. Mr. Maize told of his early days in the coal mining industry in a small town near McDonald, Pennsylvania. Starting as a trapper by Mr. Maize said he saw early in his life the need for supervision in coal mining work. He said in 1901, fire bosses were visiting the working place only every other day. Better supervision, he said brought about a great reduction in the accident rate. He also said that there were three kinds of accidents in coal mines: one, invited accidents; two, self inflicted accidents; three, unavoidable accidents, caused by other than man himself.

"Carelessness produces the greatest number of accidents. Every man has rights and duties as he enters a coal mine. Every man's duty is to keep his mine safe," said Mr. Maize.

Alfred W. Wagner of the C. A. Hughes Co. accepting Class "A" plaque from Sheldon Jones, president of the Ebensville Council of the Holmes Safety Association.

Considering present day accident figures, Mr. Maize mentioned that in the first seven months of 1949, there were 391 men killed in bituminous mines and 50 men killed in anthracite mines. In the first seven months of 1950, 289 men were killed in bituminous and 40 men killed in anthracite mines. Mr. Maize said thirty years ago from 2,000 to 2,500 men were killed in coal mines each year. The goal set by the Pennsylvania Department of mines for 1950 was 2,000,000 tons of coal for each fatal accident.

Mr. C. A. Rysek, Chairman of the Barnesboro, Pennsylvania Council, outlined the working of the Indiana County Council, which has 4,000 members and produces 5,000,000 tons of coal annually.

Mr. Sheldon Jones, President of the Ebensburg Council presented a plaque to Mr. Alfred W. Wagner of the C. A. Hughes Company for a fine safety record at its mine.

Secretaries of the various Central Pennsylvania Councils told of the progress of their Councils and of the number of meetings held each year. The Greater Johnstown Council was organized in 1946 and has 5 meetings each year, accompanied by picnics or other forms of good times.

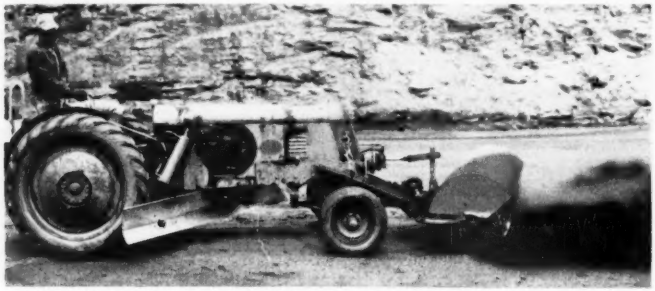
The Somerset Council has four meetings a year, divided between the towns of Somerset, Windber and Central City. A very good speaker is arranged for every meeting.

Mr. V. W. Derringer, Labor Commissioner for the Central Pennsylvania Coal Operators Association was the guest speaker. He stressed the fact that you cannot reduce accidents by merely talking safety. He said his association is behind the safety movement and believes a great deal is gained through the combined work of labor and the coal mine official. He recommended better education for the coal mining personnel.

Sixteen members of a United Kingdom coal management and labor group review their U. S. trip with Executive Vice President John D. Battle and Director of Engineering C. A. Reed, National Coal Association. The British team praised American Mechanism.

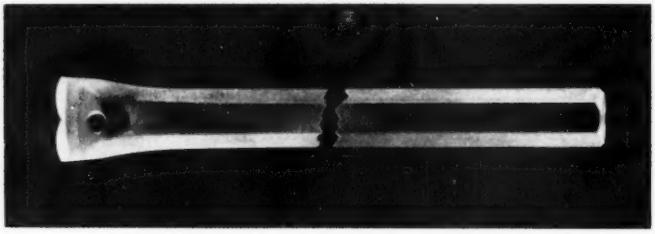
Seated, left to right: T. Morris, surface worker; F. Green, overman or underground foreman; H. Wileman, surface checkweighman; H. E. Clegg, sales and business agent; G. Essame, secretary to the team; E. L. Chiverton, production director; Mr. Reed, NCA; B. Naylor, fitter or machine maintenance man; A. Kay, underground haulageman; G. Skelly, shotfirer; P. Waters, faceworker or cutting and loading machine operator; and E. Toyle, deputy area production manager. Standing, left to right: E. Loynes, divisional electrical engineer; Julius Demeter, Anglo-American Consul in New York City; A. E. Box, manager; W. J. Pirie, chief mechanical engineer; S. Dilks, deputy or underground foreman; Emlyn James, contract worker; and Mr. Battle, NCA.

12 cubic yard Marion Type 7400 walking dragline strips overburden in the Patoka Mine of Ayrshire Collieries Corporation near Arthur in southwestern Indiana. The machine reaches out with its 175′ boom to handle an average of 4,000 cubic yards of overburden per eight-hour shift. Operators of the 7400 have been able to maintain a cut 100′ wide while moving overburden up to 70′ deep. This spoil averages 55′ and is composed of 12′ of clay, 41′ of shale and 2′ of slate.



Huber Maintainer, equipped with grader and one way broom attachment, cleaing surface of stripped coal at the Craig Brothers operation near Clinton, Pa.

● For drilling the small size holes essential in setting up the new suspension roof supports in mines, there is available Intraset Drill Steel in diameters down to 1¼ in. This drill steel has tungsten carbide inserts. It is supplied in all popular sizes and shanks to fit any hammer. The manufacturer claims there is a minimum loss of gauge in its use despite the depth of the hole drilled and also that drilling speeds have been stepped up 3 to 1 over conventional steels. They further point out that after 25,000 pieces of Intraset steel have been used over two years of field tests that the life expectancy of Intraset has shown an increase of 100 to 1, and in some operations 200 to 1, in comparison with a steel bit. Its one piece construction eliminates threads. Intraset steel is also being used for secondary drilling in quarries and plant maintenance work. Manufactured by Rock Bit Sales and Service Co., 2514 East Cumberland Street, Philadelphia 25, Pa.



New Method of Artificial Respiration

(Continued from Page 22)

as the hip-roll procedure is harder and takes more strength.

Emphasized by Dr. Ivy and associates is the importance of the first few minutes in starting artificial respiration. Those working on the study with Dr. Ivy were: Drs. Archer S. Gordon, Frank Raymon, Max Sadeve, and David C. Fainer.

JEFFREY EQUIPMENT TO BE DISPLAYED DURING THE COAL MINING EXPOSITION

Cleveland, May 14-17
Booths 2543 to 2655

2—COLMOL continuous mining machines (Model "A" with various heights from 33" to 53"—and Model "B" with various heights from 45½" to 72" and up)
1—25-ton, eight wheel main line Haulage Locomotive (new)
1—70-URB rubber tired Universal Coal Cutter
1—74-BR all hydraulic operated Drilling Machine mounted on rubber
1—30"x36" heavy duty Double Roll Crusher—capable of crushing anything that comes from the mine face
1—Type 12-A, 6-foot diameter AERODYNE Mine Fan
1—AERODYNE Midget Blower
A train of MOLVEYOR units (rubber tired sectional belt conveyors coupled together and to the COLMOL) for carrying coal from the face to entry belt conveyor (new)
A Shuttle Car—with new features of design and construction (new)
A run-around display of Mechanical Vibrating Conveyors and electric vibrating Feeder
Many accessories and Replacement Parts

● The largest collection of equipment for the bituminous and anthracite coal mining industries ever displayed by a single company will be exhibited by the Joy Manufacturing Company at the American Mining Congress in Cleveland. The Joy display will cover Booths 2320, 2326, 2332, 2325, 2425, 2525, and 2625. In addition several Joy machines will be on display outside behind the Auditorium in Booth 2700.

Of special interest to thin-seam operators will be the new 12-RB mobile cutter, 8-SC shuttle car, and 20-BU-1 loader, which were developed for high capacity production in very low coal.

To those with difficult face-preparation problems, the new Joy combination drilling and timbering machine will be of importance.

Two new methods of haulage for use behind Continuous Miners will be on display.

The outdoor display will feature the first public demonstration of Joy Champion Continuous Blast-Hole Drill for overburden shotholes. Also operating behind the

Auditorium will be a new Diesel-driven auger drill for highwall recovery.

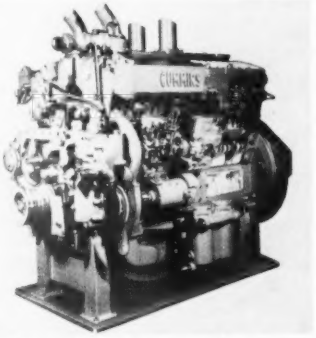
One section of the Joy exhibit will be devoted to a display of roof-bolting drills, both hydraulic and air-driven, and compressors, both mobile and stationary. New items in this section will include two self-propelled roof-bolting drills and three hydraulic impact wrenches.

Several new items of interest to electrical engineers will be on display. A new magnetic-lock type connector for extending mine cable has a threaded coupling which is provided with an ingenious locking-device to prevent unauthorized tampering. A new safety ground protective device of the core-balanced type is known as the Ground ault Detector and is suited to all low-voltage A. C. applications. A new safety ground trip for D. C. applications is thermally protected to prevent burn-outs. A new push-pull type connector is equipped with a shroud, covering the male contacts.

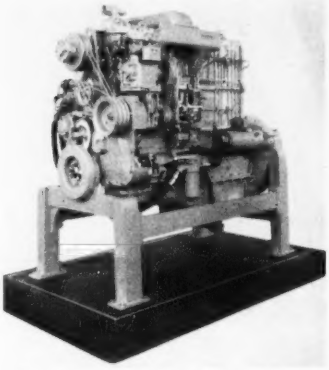
Continuous miners, shortwalls, mine fans, portable blowers, chain and shaker conveyors, cable connectors, vulcanizers, power distribution systems, carpullers, and tungsten-carbide bits will also be on display. Completing the Joy exhibit will be a presentation of mechanical and electrical component parts for Joy machines.

Mr. R. E. Campbell, Director of Advertising, Joy Manufacturing Company, will be in charge of the exhibit.

● Mine operators and equipment manufacturer representatives attending the 1951 Coal Show, Public



This lighted and activated cutaway version of the most powerful high-speed Diesel in production, the 550 hp Model NVHS-1200 Cummins Diesel, will be displayed in booth No. 600 by Cummins Engine Company, Inc., of Columbus, Indiana, at the 1951 Coal Show, Cleveland Public Auditorium, May 14-17. The V-type NVHS-1200 is a four-cycle, 12 cylinder full Diesel with a rated speed of 2100 rpm. Introduced by Cummins in 1948 the NVHS-1200 is being applied by coal mine operators in heavy-duty haulage trucks and shovels.

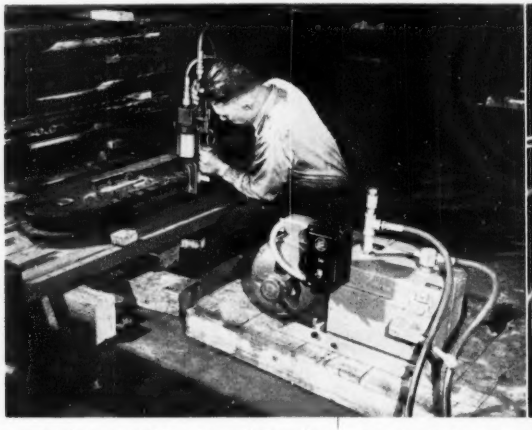


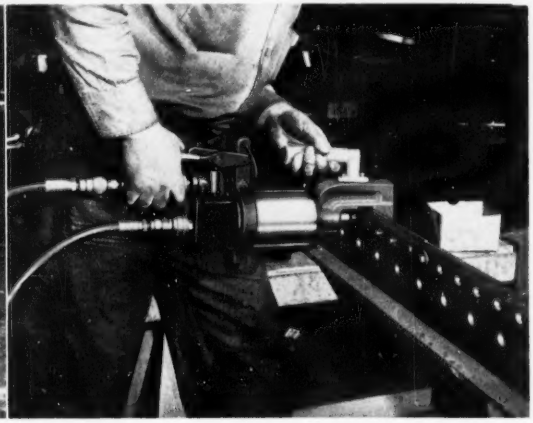
One feature in booth No. 600 assigned to Cummins Engine Company, Inc., Columbus, Indiana, at the 1951 Coal Show, Cleveland Public Auditorium, May 14-17, will be this cutaway version of the 300 hp Model NRHS-600 Cummins Diesel. Coal mine operators have steadily increased their demands for this engine since its introduction in 1949 for service in heavy-duty haulage trucks in strip mine operations.

Auditorium, Cleveland, May 14-17, will have an opportunity to examine three activated cutaway Cummins Diesels in the display area (space 600) assigned to Cummins Engine Company, Inc., Columbus, Indiana.

The three exhibit engines of the lightweight, highspeed, high horsepower Cummins line to be shown are the 150 hp Model JS-600; the 300 hp Model NHRS-600 and the 550 hp Model NVHS-1200. All are designed to allow viewers a chance to observe their mechanical operations.

• T. J. Crocker has been appointed manager of Bethlehem Collieries Corporation, succeeding the late K. M. Quickel. Mr. Crocker, a graduate of Pennsylvania State College, has served with Bethlehem Collieries in a number of capacities since 1923, and as assistant manager since 1942. Mr. L. H. Chalfant, formerly Superintendent of the Ellsworth Division, was appointed assistant manager of Bethlehem Collieries last August and is continuing in that capacity.





● The Manco Mfg. Co. of Bradley, Illinois has announced a new portable hydraulic rivet squeezer called the "Guillotine" for use in riveting liners on cutter bars of coal cutting machines.

The unit itself consists of a relatively light rivet squeezer head (38 lbs.) connected by high-pressure hoses to a semi-portable pump powered by a 2 h. p. electric motor. With the pump "on," the operator merely presses the valve handle causing the power ram to deliver 60,000 lbs. thrust against the rivet head. Release of the valve automatically retracts the ram. The entire riveting cycle requires only 3 seconds, according to the manufacturer, and the rivet is said to be squeezed flush so that no finish grinding is required.

The Guillotine, it is stated, has been carefully engineered for minimum maintenance, and specially developed oil seals prevent leaks both at no pressure and at the maximum operating pressure, 10,000 p. s. i.

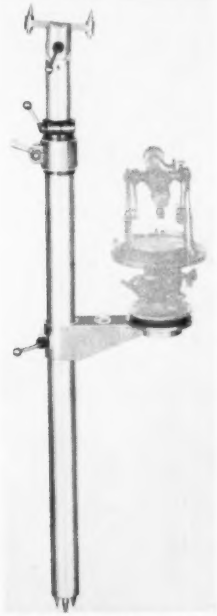
In addition to the power pump above, the unit is also available with a hand-operated pump that is completely portable and can be used for replacing rivets on coal cutting machines underground.

The basic Guillotine unit with a modification of the "C" frame head and the substitution of a cutting head in place of the ram has been successfully used in cutting steel rod. It is now being adapted to trimming the ends of roof bolts flush to the nut where headroom is a factor.

Complete information may be obtained by writing to the manufacturer, Manco Mfg. Co., Bradley, Ill.

• A new versatile telescoping, sturdily built yet light weight transit support to be manufactured and marketed by Bowdil Company, Canton, Ohio, will be on demonstration at the firm's COAL SHOW exhibit, Booth 1006.

Basically a telescoping aluminum post, the surveyor simply sets base on the mine floor and jabs top column into the roof, then locks in position. An arm on the main column containing a bubble rod level accommodates the transit on a table that fits standard transits, has adapters for varying bases.



The practical product allows conveyor operations to continue while surveying, for the arm table can be set to swing out over the edge of the moving conveyor. In other types of mines (track or rubber mounted), where it is necessary to move quickly out of the way of approaching "trips," the Bowdil Transit Support can be released by one clamp and moved aside.

In tunneling, building construction, sewer survey or any field of work where an overhead surface is available, the versatile support has outstanding safety, space saving and carrying advantages.

At the show, Bowdil will also feature running models of their latest cutter bar, chain and bits in operation with other products on display. F. T. Bowman and H. M. Morrow, General Manager and Ass't General Manager of Bowdil will be in charge of the exhibit.

• Field engineers of the Twin Disc Clutch Company of Racine, Wisconsin, will man the Coal Show display of Twin Disc to detail functioning and operation of the concern's mechanical clutches, power take-offs, reduction gears, hydraulic couplings, hydraulic power take-offs and hydraulic torque converters in various mining and hauling operations.

Using View Graph slides, the field engineers assisted by Twin Dics design engineers, will be on hand throughout the show to discuss power transmission problems with visitors.

Twin Disc, a regular exhibitor at the Coal Show, will have booth No. 2105.

Highlighting the display will be examples of advancements in mechanization of mining and hauling operations made possible through use of Twin Disc Hydraulic Torque Converters and Hyrdaulic Couplings. In addition to cutaway model of the Twin Disc Hydraulic Torque Converter, transparencies showing features and power-smoothing advantages of Hydraulic Couplings and Hydraulic Power Take-Offs, will be shown, along with transparencies of several Twin Disc mechanical clutches and power take-offs.

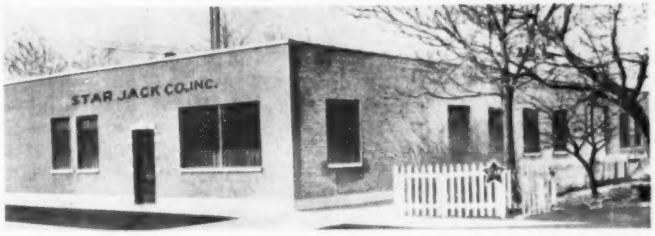
Prominent in the display will be examples of application of direct drive an clutch drive models of the Twin Disc Hydraulic converter in heavy hauling, including direct drive voncerters which have eliminated 99 per cent of gear shifting on steep hauls with 25-30 ton loads from the open pits of the Mesabi Iron Range.

• Catalog No. 812 by the Jeffrey Manufacturing Company is descriptive of the type 67 CLR Conveyor Loader, the latest type of Jeffrey loader for conveyor mining. This Catalog tells how the Conveyor Loader operates, describes its hydraulic tramming mechanism, its

powerful, rugged gathering head, finger-tip hydraulic control; also general dimensions and general specifications.

STAR TO EXHIBIT NEW MINE JACKS AT COAL SHOW

The Star Jack Company who recently erected a new and larger plant at 2634 Davisson St., River Grove, Illinois, near Chicago, will show two new mine jacks in their exhibit, Booth 2300, at the Coal Show. One is a Dual Foot Hydraulic Timber Setter and Roof Bolt Drilling Unit and the other is a Hydraulic Mine Car Straightener.



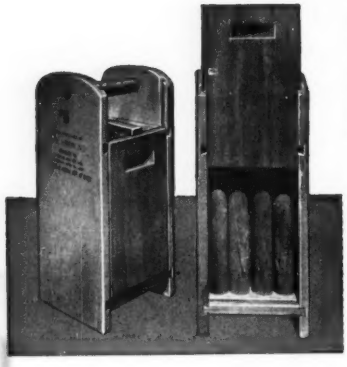
New manufacturing plant of the Star Jack Company, located at 2634 Davisson Street, River Grove, Illinois, a suburb of Chicago. The old plant at Elmwood Park, adjoining River Grove, will be used for storing patterns and parts and materials. The Star Jack Company manufactures light weight aluminum mine roof timber raising jacks that are easy to handle and users say they increase output 30%.

WOOD TAMPING POLES

For Tamping Explosive Shots: Poles are round made of Hardwood. Sizes to 10 ft. long.

1"	Dia.	8c per lineal ft.
1⅛"	Dia.	12c per lineal ft.
1¼"	Dia.	14c per lineal ft.
1⅜"	Dia.	16c per lineal ft.
1½"	Dia.	18c per lineal ft.
1¾"	Dia.	24c per lineal ft.
2"	Dia.	32c per lineal ft.

Special diameters and lengths can be furnished. These Poles meet the requirements of the New Federal Mine Safety Code.



SECTIONAL TAMPING POLES

These Poles are made of straight grained wood and are coupled together with removable wood pins held in place in recessed grooves by a rubber band and can be quickly connected and unconnected.

Couplers and Head Blocks are 4, 5, and 6 inches in diameter. Please specify size when ordering. Poles are 1½ inches in diameter.

Head Blocks		4" Dia.		$1.70 Ea.
Couplers		4" Dia.		3.90 Ea.
Poles 12 ft.	long	1½" Dia.		5.60 Ea.
Poles 14 ft.	long	1½" Dia.		4.20 Ea.
Poles 16 ft.	long	1½" Dia.		4.80 Ea.
Poles 18 ft.	long	1½" Dia.		6.30 Ea.
Poles 20 ft.	long	1½" Dia.		7.00 Ea.
Poles 22 ft.	long	1½" Dia.		8.80 Ea.
Poles 24 ft.	long	1½" Dia.		9.60 Ea.

EXPLOSIVE BOXES: Made entirely of wood having no metal parts, tongue grooved and dovetailed construction with automatic lock using a rubber band for a spring, treated with paraffin to make moisture resistant. "Approved by the Pennsylvania Department of Mines." Sizes as listed based on 1¼" x 8" sticks.

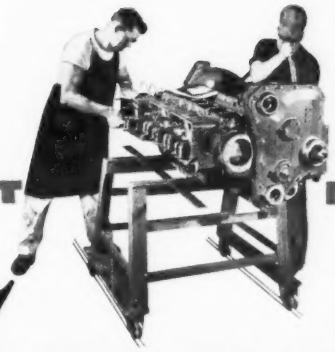
Powder Box Prices are as follows:

No. 9	Powder	Box	$2.55 Ea.	No. 25	Powder	Box	$5.10 Ea.
No. 12	Powder	Box	2.95 Ea.	No. 36	Powder	Box	6.50 Ea.
No. 16	Powder	Box	3.45 Ea.	No. 50	Powder	Box	7.60 Ea.
No. 20	Powder	Box	3.90 Ea.	No. 72	Powder	Box	8.70 Ea.

Detonator Box Prices are as follows:

No. 6 size 2½" x 3" x 6" inside $2.15 Ea. No. 8 size 2" x 2½" x 8" inside $2.15 Ea.

J. V. Hammond Company Spangler, Pennsylvania



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Lightweight High-speed Diesel Engines (50-550 hp) for: on-highway trucks • off-highway trucks • buses • tractors • earthmovers • shovels • cranes • industrial locomotives • air compressors • logging yarders and loaders • drilling rigs • centrifugal pumps • generator sets and power units • work boats and pleasure craft

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An AUTHENTIC ORIGINAL

Whether you're an art expert or coal expert, you'll recognize this truth: There's only **one authentic original,** topping all imitations as **the** foremost painting . . . or **the** foremost shot firer.

Such an original work of engineering is Femco's 1 to 10-Shot Firer . . . the first capacitor-operated shot firer developed specifically for coal miners everywhere.

Some years ago Femco pioneered the special circuit which enabled it to produce the first shot firer not dependent on speed of operation for effectiveness.

Now, whether in mine or open pit blasting, the critics, the men who mine, use the Femco, the lightest, surest and safest 1 to 10-shot firer in the long history of coal.

So for CONVENIENCE ➧ Weighs slightly over 1 lb. Can be carried and fired from belt. Insertion of Safety Key charges capacitors from battery; neon light gives "ready" signal, and charge is fired by removing Safety Key.

SAFETY ➧ Permissible 10-shot blasting unit U. S. Bureau of Mines Approval 1603. Cannot be fired accidentally since battery disconnects from capacitors which transfer charge to firing line. Battery cannot be sparked or otherwise short circuited.

and (B)lasting DEPENDABILITY ➧ When neon light glows you are ready to fire! Fires ten shots as easily as one.

Use Femco's Authentic Original—the 1 to 10-Shot Firer!

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R-4 Lamps Brilliant, unfailing, effective light that means added safety for the miner, added production for the mine.

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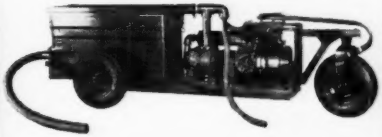
OF IMPORTANCE TO YOUR MINE SAFETY AND PRODUCTION

...at Booth 1009-Coal Show

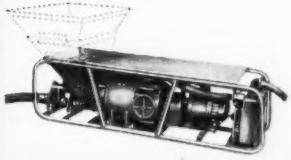
New M.S.A. All-Electric Steam Cleaner—Quickly cleans grease and dirt from equipment. One man operation. Patented, and built under Homestead-Yeager design.

New M.S.A. Bolt Hole Cleaner—Self-contained unit removes dust when drilling for bolt roofing. Easy to operate.



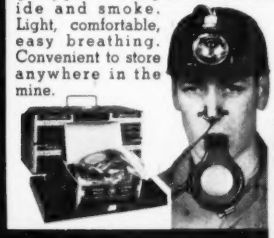
New M.S.A. Pneolator—Safe, effective, automatic artificial respiration for all cases of arrested breathing.

M. S. A. FaceDuster—Fast, economical distribution of rock dust in all sections of mine. Ideal for the conveyor section.



New M.S.A. Bantam High Pressure Rock Dust Distributor—Rock dust right up to the working face. Readily transported in shuttle cars or on rubber tires.

New M. S. A. Self-Rescuer—Emergency protection against carbon monoxide and smoke. Light, comfortable, easy breathing. Convenient to store anywhere in the mine.



M.S.A. MinePhone Communication System—Improves haulage efficiency with safety by permitting dispatcher to contact any or all motormen at any point in mine—motormen can reply or communicate with each other without stopping trip.

You'll want to see and learn—first hand—the benefits this M.S.A. equipment can bring to your mining operations in helping your efforts to step up mine production and increase over-all mine safety. You are cordially invited to discuss your special problems in Booth 1009—Coal Show. We'll be looking for you.

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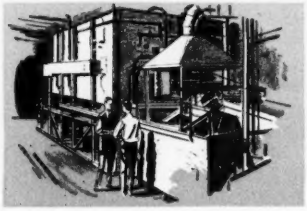

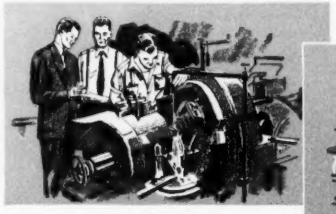

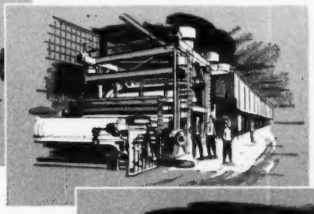

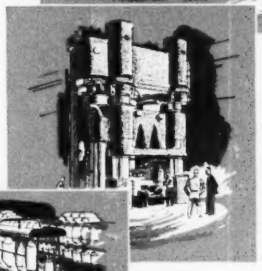

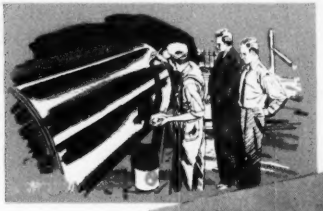

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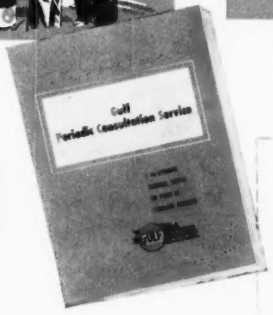

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